

# APPENDIX

## ANNUAL REPORT

## THE GOVERNMENT OF

## THE COLONY

1891

REVENUE	EXPENDITURE	REVENUE	EXPENDITURE
£ 1,000,000	£ 1,000,000	£ 1,000,000	£ 1,000,000
£ 1,000,000	£ 1,000,000	£ 1,000,000	£ 1,000,000
£ 1,000,000	£ 1,000,000	£ 1,000,000	£ 1,000,000
£ 1,000,000	£ 1,000,000	£ 1,000,000	£ 1,000,000

Printed and Published by the Government Printer, at the Government Printing Office, 1891.



BY APPOINTMENT

TO HER MAJESTY THE QUEEN, THE ROYAL EXCHEQUER, AND THE ROYAL NAVY OFFICE.

Printed and Published by the Government Printer, at the Government Printing Office, 1891.

Printed and Published by the Government Printer, at the Government Printing Office, 1891.

Printed and Published by the Government Printer, at the Government Printing Office, 1891.

# SALE OF GOVERNMENT PUBLICATIONS.

The undermentioned Agents have been appointed for the sale of Government Publications, including Parliamentary Papers, of Parliament, Record Office Publications, &c., and for the sale of such as are purchased from them either directly or through retail booksellers, who are entitled to a discount of 25 per cent. from the selling prices:—

## IN ENGLAND:—

For all publications *excepting* Ordnance and Geological Maps the Hydrographical Works of the Admiralty, and Patent Office Publications:—Messrs. EYRE AND SPOTTISWOODE, East Harding Street, E.C.

For Hydrographical Works of the Admiralty:—Mr. J. D. POTTER, 145, Minories, E.C.  
Patent Office Publications are sold at the Patent Office.

For all Publications *excepting* the Hydrographical Works of the Admiralty, Patent Office Publications, and Ordnance and Geological Maps:—

IN SCOTLAND:—Messrs. OLIVER & BOYD, Edinburgh.

IN IRELAND:—Mr. E. PONSONBY, 116, Grafton Street, Dublin.

The Publications of the Ordnance Survey and of the Geological Survey are obtained from Agents in most of the chief towns in the United Kingdom, through any Bookseller, or from the Director-General of the Ordnance Survey, Southampton; or, in the case of Ireland, from the Officer in Charge Ordnance Survey, Dublin. In addition, Ordnance Survey Publications can be obtained through Head Post Offices, &c., where there are no accredited Agents.

The following is a list of some of the more important Parliamentary and Official Publications recently issued:—

## Parliamentary:

### Statutes:—

*Public General Statutes*, 1891. No. 2. in 100. With index Tables, &c. 10s. 6d.

*Acts and Orders in Council*, 1891. No. 2. 25s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Revenue Estimates*, Tables showing subsequent results, submitted by Accountants-General, 1891. 10s. 6d.

*Statutes in force*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*The Statutory Rules and Orders*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the Admiralty*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the War Office*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the Home Office*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the Colonial Office*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the India Office*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the Foreign Office*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the Treasury*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the Privy Council*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the House of Commons*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the House of Lords*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the Senate of the University of London*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the Senate of the University of Cambridge*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the Senate of the University of Oxford*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the Senate of the University of Edinburgh*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the Senate of the University of Glasgow*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the Senate of the University of Aberdeen*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

*Minutes of the Council of the Senate of the University of Dundee*, 1891. 10s. 6d. in 100. With index Tables, &c. 10s. 6d.

SUPPLEMENT  
TO THE  
TWENTY-NINTH ANNUAL REPORT  
OF  
THE LOCAL GOVERNMENT BOARD  
FOR IRELAND,  
1900-1.

---

REPORTS ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF CITIES AND TOWNS IN  
IRELAND, AND ON THE PRECAUTIONARY  
MEASURES RESPECTING PLAGUE TAKEN BY  
LOCAL AUTHORITIES AT THE VARIOUS PORTS.

---

Presented to both Houses of Parliament by Command of His Majesty.

---



DUBLIN:  
PRINTED FOR HIS MAJESTY'S STATIONERY OFFICE  
BY ALEXANDER THOM & CO. (LIMITED).

And to be purchased, either directly or through any Bookseller, from  
E. PONSONBY, 116, GRAFTON STREET, DUBLIN; or  
KYRE AND SPOTTISWOODE, EAST HARDING STREET, FLEET STREET, E.C. and  
32, ABINGDON STREET, WESTMINSTER, S.W.; or  
OLIVER & BOYD, EDINBURGH.

1902

[Cd. 1260.] Price 1s. 4d.





# CONTENTS.

	Page.
REPORT of the COMMITTEE appointed by the Local Government Board for Ireland to inquire into the public health of the City of Dublin, . . . . .	1
REPORTS of MEDICAL INSPECTORS on the sanitary circumstances and administration of cities and towns in Ireland, viz. :—	

## INSPECTOR.

### (a.) County Boroughs :—

Belfast, . . . . .	Dr. Clibborn, . . . . .	22
Cork, . . . . .	Dr. Stawell, . . . . .	28
Limerick, . . . . .	Sir Acheson MacCullagh, . . . . .	44
Londonderry, . . . . .	Dr. Coey Bigger, . . . . .	49
Waterford, . . . . .	Dr. Browne, . . . . .	59

### (b.) Urban Districts :—

Annagh, . . . . .	Dr. Clibborn, . . . . .	67
Ballymena, . . . . .	Dr. Clibborn, . . . . .	76
Birr, . . . . .	Dr. Edgar Flinn, . . . . .	82
Blackrock, . . . . .	Dr. Browne, . . . . .	85
Bray, . . . . .	Dr. Browne, . . . . .	89
Carlow, . . . . .	Dr. Edgar Flinn, . . . . .	92
Castleblayney, . . . . .	Dr. Clibborn, . . . . .	96
Clonakilty, . . . . .	Dr. Browne, . . . . .	99
Coleraine, . . . . .	Dr. Coey Bigger, . . . . .	102
Dalkey, . . . . .	Dr. Browne, . . . . .	109
Drogheda, . . . . .	Dr. Edgar Flinn, . . . . .	112
Dundalk, . . . . .	Dr. Edgar Flinn, . . . . .	121
Dungurvan, . . . . .	Dr. Browne, . . . . .	128
Enniscorthy, . . . . .	Dr. Edgar Flinn, . . . . .	132
Fermoy, . . . . .	Dr. Browne, . . . . .	135
Galway, . . . . .	Sir Acheson MacCullagh, . . . . .	139
Kilkenny, . . . . .	Dr. Edgar Flinn, . . . . .	143
Killarney, . . . . .	Dr. Browne, . . . . .	151
Killiney and Ballybrack, . . . . .	Dr. Browne, . . . . .	155
Kingstown, . . . . .	Dr. Browne, . . . . .	158
Kinsale, . . . . .	Dr. Browne, . . . . .	168
Lisburn, . . . . .	Dr. Clibborn, . . . . .	171
Lurgan, . . . . .	Dr. Clibborn, . . . . .	181
Nenagh, . . . . .	Dr. Browne, . . . . .	187
Pembroke, . . . . .	Dr. Edgar Flinn, . . . . .	191
Portadown, . . . . .	Dr. Clibborn, . . . . .	198
Queenstown, . . . . .	Dr. Browne, . . . . .	209
Rathfriland and Rathgar, . . . . .	Dr. Browne, . . . . .	212
Skibbereen, . . . . .	Dr. Browne, . . . . .	218
Sligo, . . . . .	Dr. Coey Bigger, . . . . .	222
Tandaragee, . . . . .	Dr. Clibborn, . . . . .	232
Tipperary, . . . . .	Dr. Browne, . . . . .	236
Tullamore, . . . . .	Dr. Edgar Flinn, . . . . .	241
Trillick, . . . . .	Dr. Browne, . . . . .	245

# CONTENTS.

	Inspector.	Page
Wexford, . . . . .	Dr. Edgar Flinn, . . . . .	251
Wicklow, . . . . .	Dr. Edgar Flinn, . . . . .	255
Youghal, . . . . .	Dr. Browne, . . . . .	259
Athlone, . . . . .	Dr. Edgar Flinn, . . . . .	262
Clonmel, . . . . .	Dr. Browne, . . . . .	267
<i>(c.) Towns not Urban Districts.</i>		
Ballyshannon, . . . . .	Dr. MacCarthy, . . . . .	270
Bandoran, . . . . .	Dr. MacCarthy, . . . . .	272
Bandon, . . . . .	Dr. Browne, . . . . .	275
Kanturk, . . . . .	Dr. Browne, . . . . .	278
Howth, . . . . .	Dr. Edgar Flinn, . . . . .	281
REPORTS OF MEDICAL INSPECTORS on the precautionary measures taken against the introduction of Plague at the various Ports in Ireland :—		
Port of Dublin, . . . . .	Dr. Edgar Flinn, . . . . .	287
Ports in Leinster other than Dublin, . . . . .	Dr. Edgar Flinn, . . . . .	292
Ports between Carlingford Lough and Portrush, Co. Antrim, . . . . .	Dr. Clibborn, . . . . .	300
Ports between Portrush, Co. Antrim, and Kinnasha- nagh Point, Co. Sligo, . . . . .	Dr. Coey Bigger, . . . . .	310
Ports between Kinnasha- nagh Point, Co. Sligo, and Beal Point, Co. Kerry . . . . .	Sir Acheson MacCullagh, . . . . .	313
Ports between Beal Point, Co. Kerry, and Waterford Harbour, inclusive, . . . . .	Dr. J. Cooper Stawell, . . . . .	315

TWENTY-NINTH ANNUAL REPORT  
OF THE  
LOCAL GOVERNMENT BOARD FOR IRELAND,  
1900-1.

SUPPLEMENT

CONTAINING

REPORTS ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF CITIES AND TOWNS IN  
IRELAND, AND ON THE PRECAUTIONARY  
MEASURES RESPECTING PLAGUE TAKEN BY  
LOCAL AUTHORITIES AT THE VARIOUS PORTS.

DUBLIN.

REPORT OF THE COMMITTEE APPOINTED BY THE  
LOCAL GOVERNMENT BOARD FOR IRELAND TO  
INQUIRE INTO THE PUBLIC HEALTH OF THE CITY  
OF DUBLIN.

*TO THE LOCAL GOVERNMENT BOARD FOR IRELAND.*

GENTLEMEN,

In accordance with your letter of the 7th February, 1900, appointing us to make inquiry under the provisions of Section 209 of the Public Health (Ireland) Act, 1878, as to the cause of the high death rate in Dublin, and to recommend measures for adoption with the view of improving the health of the city, we now beg to submit our Report to you on the matters so referred to us.

After a preliminary meeting to consider the lines on which the inquiry should be conducted, we held our first public sitting in the Council Chamber of the City Hall, kindly placed at our disposal for that purpose by the Corporation of Dublin, on Tuesday, the 13th February, 1900.

We subsequently held public sittings on the 14th, 15th, 16th, 19th, 20th, 21st, 22nd, 23rd, 26th, 27th, and 28th February, and the 1st, 2nd, 20th, 21st, and 22nd March—in all seventeen days—for the reception of evidence.

At the first sitting application was made on behalf of the Corporation, the Dublin Victuallers' Association, and two large Work-

men's Clubs, that these bodies might be professionally represented at the inquiry.

This question having been referred to you, we, having been made aware of the reply, dated the 13th February, which you gave to the representations made on behalf of the Corporation in favour of, permitting bodies and persons interested to appear by Counsel, took the matter into consideration and resolved by a majority of four to two that Counsel need not be heard before us.

We have to thank fifty-six gentlemen and three ladies who kindly attended the inquiry (we had no power to, summons witnesses), and gave us valuable information. Of these witnesses twenty-two were members of the medical profession and nine were officers of the Dublin Corporation.

During the adjournment of the inquiry from the 2nd to the 20th of March, those of our Committee who were not personally and thoroughly conversant with the slums of Dublin inspected the poorest districts of the city, referred to in the evidence, and also the other places therein referred to—dairy yards, &c.

After this inquiry was closed we visited Manchester and Liverpool, in order to see what has been done as to the housing of the poorest classes in those cities, the disposal of house refuse, baths, and wash-houses, dairy yards, &c., &c.

At Liverpool, Dr. Hope, Medical Officer of Health, who had given us most valuable information at the inquiry in Dublin, accompanied us on our inspection and pointed out the places and things he had referred to when giving evidence.

As we anticipated, we derived great advantages from our personal inspections of sanitary works in these two cities, especially by being thereby more thoroughly able to understand and appreciate the evidence given by Dr. Hope.

You are aware that the late Sir Robert Rawlinson and Dr. (now Sir Francis) MacCabe were, in September, 1879, appointed Royal Commissioners to inquire into the then existing system of sewerage and drainage in the City of Dublin, in so far as such sewerage and drainage affected the sanitary condition of the said city and the state of the River Liffey flowing therein, and whether such system is directly or indirectly prejudicial to the public health, and whether any or what changes are necessary therein with a view to sanitary improvement.

The Royal Commissioners deemed it right, beside the special duties assigned to them by the Royal Warrant, to ascertain to what extent the abnormally high death rate might be attributed to defective sewerage and drainage, and the condition of the River Liffey, and to what extent it might be considered traceable to other causes.

Acting on this view the Royal Commissioners extended their inquiry and received evidence as to:—

1. The condition of tenement houses;
2. The removal of house refuse;
3. The formation of the streets;
4. The scavenging of the city;
5. The water supply;
6. The baths and wash-houses;
7. The slaughter-houses; and
8. The Corporation refuse depôts.

*Inter alia* we have inquired into each of these matters in its existing phase, and it may be interesting to contrast the state of things in 1900 with that which was found to exist in 1879-80.

In 1879 there were 9,760 houses let in tenements, of which 2,300 were unfit for human habitation; the number of registered tenement houses\* is now 6,585. Then there was no regular system of domestic scavenging; now the yards of the greater number of these houses are cleansed and the refuse is removed by the Cleansing Department of the Corporation periodically, and the old privies have been almost altogether replaced by water-closets.

In 1879 there was no system of removal of house refuse; now a large staff of men and horses is engaged in daily collecting and removing from the houses the contents of dust-bins which have to a very great extent replaced the ashpits in which refuse was kept for long periods before removal.

In 1879 the inefficient scavenging led the Royal Commissioners to describe Dublin as "essentially a muddy-streeted city"; now all the principal streets are swept on six nights of each week and all stuff is removed before 9 o'clock, a.m.

In 1879 there were very few streets paved, all of the rest being macadamized; now all the principal and many of the minor streets have been formed with first class stone sett-paving at an expense of £360,000.

In 1879 there was an excellent supply of water from the Vartny Reservoir, the same supply as at present; but an additional reservoir is in course of being provided to guard against any special drought such as occurred in 1893.

In 1879 there were no public baths except those attached to the Mendicity Institution, and no public wash-houses. Since then two large swimming baths, with a number of reclining baths and a wash-house (the latter largely used), have been provided by the Corporation.

In 1879 there were 104 private slaughter-houses, and, with very few exceptions, they were stated to be objectionable in several ways. Since then the number has been reduced to 56, and a large abattoir has been erected on the north side of the city by the Corporation.

Up to 1879 all the materials collected by scavenging and the refuse removed from houses were deposited in the Corporation depôts, and this was stated to be "injurious to the health of the population."

Since then a three-cell refuse-destroyer has been erected at the Stanley-street Depôt, and in addition 300 tons a day are sent out to sea, and there discharged by the Corporation barge *Eblana*.

We now come to consider the conclusions at which we have arrived on the evidence which has been given at our inquiry, and our personal knowledge of the circumstances as to the subjects referred to us, namely:—

1. The cause of the high death rate in Dublin; and
2. The measures which we recommend for adoption with the view of improving the health of the city.

The City of Dublin contained, according to the Census taken in 1891, a population of 245,001.† Since then there have been no

\* The expression "tenement house" in the Royal Commissioners' Report, 1880, and throughout this Report, means a house let to two or more families.

† Population according to Census of 1901 is 282,198, including area added to the city under the Dublin Corporation Act, 1900.

means of exactly ascertaining the increase or decrease of the population, but on the whole it may be regarded as being at present the same as in 1891.

The area comprised within the present municipal boundaries is stated by the Registrar-General to be 3,733 statute acres.

The valuation, exclusive of exemptions is, on the same authority, £690,864. 10s.

The number of inhabited houses was (in 1891) 25,764, but from the evidence given at the inquiry this number is, it appears, now reduced to about 24,000.\*

The numbers of families inhabiting these 25,764 houses in 1891 were as follows:—Fourth class, 19,342, or 37·3 per cent. of the population—that is occupying the worst accommodation; third class accommodation, 14,536, or 28 per cent.; second class accommodation, 13,279, or 25·6 per cent.; and first class accommodation, 4,694, or 9·1 per cent.: and the total number of families is 51,851.

The average density of population in 1891 was 65·6 per statute acre.

#### COMPARATIVE MORTALITY STATISTICS OF DUBLIN.

##### *The Death Rate of Dublin from all Causes.*

The mean yearly death rate in Dublin from all causes during the ten years 1890-99 was 29·5 per 1,000 of the population, a rate much higher than that in London, and considerably in excess of that in any of the thirty-three large towns of England and Wales during the same period. In the decade immediately preceding—1880-89—the mean annual death rate from all causes in Dublin was 30·6, so that the improvement that took place in the ten years 1890-99 was but small. And, indeed, if the death rate in Dublin anterior to 1880 be inquired into, it appears that it was lower in years immediately antecedent to 1880 than in years following. For it was stated in evidence given by the then Registrar-General of Ireland before the Royal Commission on the Sewerage and Drainage of Dublin in 1879 (Appendix No. 16 to the Report of that Commission) that the mean yearly death rate from all causes in Dublin during the ten years 1869-78 was 28·4 per 1,000 of the population. At that time the mean death rate of Dublin was lower than that of Liverpool, Glasgow, or Manchester, although greater than that of London. Since then, however, a material reduction has come about in the death rates of these four towns. There has been no such reduction in Dublin; there has, instead, been a small increase of the death rate.

Of late years, it is true, there has been a slight improvement in the Dublin death rate, which was 28·6 per 1,000 of the population in the five years 1894-8, but in 1899, the death rate rose to 33·6 per 1,000 of the population, a point higher than it had touched since 1880.

##### *The Death Rate in Dublin in relation with age.*

In an Appendix to this Report will be found a table furnished by the Registrar-General for Ireland, in which are set out the mean annual

\* According to the Census of 1901 the number of inhabited houses is now 23,600, including area added to the city under the Dublin Corporation Act, 1894.

numbers of deaths, together with the mean annual death rate per 1,000 living at certain ages in Dublin during the five years 1894-8. In every year or group of years in life the death rate in Dublin is higher than in London, as may be seen by comparison of the following list of death rates per 1,000 living at each age-group in Dublin and in London, respectively. The London figures are those given by the Medical Officer of Health to the London County Council for the year 1898 :—

Ages.	Dublin City.	London.	Ages.	Dublin City.	London.
0-1 . . . . .	245.8	189.0	15 — . . . . .	7.3	2.8
1 — . . . . .	100.5	64.7	20 — . . . . .	9.4	3.7
2 — . . . . .	41.0	24.5	25 — . . . . .	13.6	6.0
3 — . . . . .	27.3	15.0	35 — . . . . .	20.7	11.6
4 — . . . . .	19.8	9.9	45 — . . . . .	30.6	19.2
			55 — . . . . .	61.4	34.9
Under 5. . . . .	89.5	63.3	65 — . . . . .	101.9	61.7
			75 — . . . . .	170.7	142.8
5 — . . . . .	11.0	4.0	85 and upwards,	282.8	262.0
10 — . . . . .	6.6	1.9			

The most striking feature of these comparative figures is the relatively high mortality in Dublin between the ages of five and thirty-five. In the earliest years of life the mortality in Dublin, although proportionally higher than that in London, does not compare so unfavourably with the London mortality as at ages between five and thirty-five, when the mortality of Dublin is more than double, and at one age group even treble, that of London. These ages are the healthiest periods in life, and in Dublin, as elsewhere, this holds true. But although this is true it is less true for Dublin than for London. There is, in fact, in Dublin a larger proportion of deaths at these healthy ages as compared with the less healthy ages than usually obtains.

In estimating the value of these and other comparisons subsequently made in this Report between Dublin and London, it has to be borne in mind that the birth rate of Dublin is higher than that of London, that of Dublin during the five years 1894-8 having been 33.2 per 1,000 of the population, while that of London was, during the same period, 30.1 per 1,000 of the population. Furthermore, there is a difference between London and Dublin as regards the social condition of the population in each, Dublin containing a larger proportion of the poorer classes than does London.

*The Diseases more especially Contributory to the high Death Rate in Dublin.*

The high death rate in Dublin is not due to the mortality from every disease being consistently in excess of the mortality commonly referable to those diseases in other large towns. Indeed the average mortality from certain causes of death in Dublin is below the average mortality from these causes in other large towns. But there are other causes of death which give rise to a mortality in Dublin proportionally much greater than these causes ordinarily produce in large towns. Much detailed information on this point is given in certain tables furnished to the Committee by the Registrar-General for Ireland, and printed as an Appendix to this Report. For convenience of reference a table is here inserted in our Report, which affords means of comparison between the death rates

of Dublin City and of London,\* respectively, from certain causes during the period 1894-8. The death rates for Dublin have been calculated from figures supplied by the Registrar-General for Ireland, and those for London had been calculated from returns contained in the Reports of the Registrar-General for England and Wales :—

		DUBLIN.	LONDON.
		Mean Yearly Death Rate during the Five Years 1894-8 per 1,000 persons living.	Mean Yearly Death Rate during the Five Years 1894-8 per 1,000 persons living.
<b>I. ZYMOTIC DISEASES :—</b>			
	Small Pox, . . . . .	0.149	0.007
	Measles, . . . . .	0.364	0.661
	Scarlet Fever, . . . . .	0.279	0.185
	Typhus, . . . . .	0.036	0.001
	Whooping Cough, . . . . .	0.092	0.475
	Diphtheria, . . . . .	0.106	0.529
	Simple and Ill-defined Fever, . . . . .	0.022	0.002
	Enteric Fever, . . . . .	0.447	0.136
	Diarrhoea, Dysentery, . . . . .	0.268	0.792
	Other Zymotic Diseases, . . . . .	0.302	0.478
	<b>Total,</b> . . . . .	<b>4.049</b>	<b>3.270</b>
<b>II. PARASITIC DISEASES, . . . . .</b>		<b>0.036</b>	<b>0.011</b>
<b>III. DIETETIC DISEASES, . . . . .</b>		<b>0.118</b>	<b>0.139</b>
<b>IV. CONSTITUTIONAL DISEASES :—</b>			
	Phthisis or Pulmonary Consumption, . . . . .	3.735	1.769
	Other Constitutional Diseases, . . . . .	3.097	1.938
	<b>Total,</b> . . . . .	<b>6.832</b>	<b>3.708</b>
<b>V. DEVELOPMENTAL DISEASES, . . . . .</b>		<b>2.051</b>	<b>1.254</b>
<b>VI. LOCAL DISEASES :—</b>			
Diseases of	The Brain and Nervous System, . . . . .	3.187	1.872
	Organs of Special Sense, . . . . .	0.025	0.042
	Circulatory System, . . . . .	2.195	1.519
	Respiratory System, . . . . .	5.910	3.459
	Digestive System, . . . . .	1.899	1.208
	Lymphatic System, . . . . .	0.016	0.023
	Urinary System, . . . . .	0.573	0.515
	Generative System, . . . . .	0.040	0.063
	Accidents of Child-birth, . . . . .	0.063	0.059
	Diseases of Locomotive System, . . . . .	0.074	0.057
	Diseases of Integumentary System, . . . . .	0.085	0.067
	<b>Total,</b> . . . . .	<b>13.572</b>	<b>8.879</b>
<b>VII. VIOLENT DEATHS, . . . . .</b>		<b>0.697</b>	<b>0.767</b>
<b>VIII. DEATHS FROM ILL-DEFINED AND UNSPECIFIED CAUSES, . . . . .</b>		<b>1.470</b>	<b>0.619</b>
<b>DEATHS FROM ALL CAUSES, . . . . .</b>		<b>28.830</b>	<b>18.651</b>

\* London has been selected for purposes of comparison because of its death rate from all causes being nearly that of the average. The rate from all causes in the thirty-three large towns of England and Wales.



If these groups of diseases, given in the above table, be considered in order, it will be seen that Dublin suffers somewhat more from Zymotic diseases than does London. As regards two diseases in this group, however, viz.:—Measles and Diphtheria, the disadvantage is with London, but all the other constituents of the group give rise to a higher mortality in Dublin than in London. This higher mortality in Dublin is especially marked as regards Enteric (or Typhoid) Fever, and a number of maladies classed together as "Other Zymotic Diseases."

The main constituents of the last-named class are Influenza, Septic diseases, and Venereal diseases.

It is worthy of note that Typhus Fever, formerly so prevalent in Dublin, has, in recent years, caused very few deaths there.

The second group, viz.:—Parasitic diseases, is of small account, and needs no reference.

The third group, viz.:—Dietetic diseases, is a lesser cause of mortality in Dublin than in London. The main constituent of this group is Intemperance, with Starvation, and Scurvy as minor factors.

From the fourth group, viz.:—Constitutional diseases, Dublin suffers much more than London. The main constituent of this group is Phthisis (consumption of the lungs); and it will be seen that the mortality from this cause in Dublin is more than double that of London.

From "Other Constitutional Diseases" also the Dublin mortality rate is much higher than that of London. A considerable number of maladies is comprised in the last-mentioned class; the principal death-causing constituents of this class being Cancer, forms of Tuberculosis other than Phthisis, and Rheumatic Affections.

The fifth group, viz.:—Developmental diseases, gives rise to a somewhat higher death rate in Dublin than in London. The chief constituents of this group are Old Age and Premature Birth. Importance, however, is not to be largely attached to figures in this group, inasmuch as high figures under the heading "Old Age" are not infrequently due rather to want of accurate specification of the real cause of death than to actual causation of death by senile decay.

The mortality caused by the sixth group, viz.:—Local diseases, is much higher in Dublin than in London. This group, however, is a large one, and it will be observed that, as regards the classes of disease it comprises, Dublin suffers somewhat less than London from diseases of the Organs of Special Sense, of the Lymphatic System, and of the Generative System, while it suffers but little more than London from diseases of the Digestive, Urinary, Locomotive, and Integumentary Systems, and from Accidents of Child-birth. On the other hand, deaths from diseases of the Respiratory System and of the Brain and Nervous System are in much greater proportion in Dublin than in London, while diseases of the Circulatory System also give rise to a considerably larger relative amount of deaths in Dublin. The main constituents of the class of diseases of the Brain and Nervous Systems are Apoplexy, Convulsions, Inflammation of the Brain and its membranes and Hemiplegia (Paralysis); of the class of diseases of the Respiratory System the main constituents are Bronchitis and Pneumonia; and of diseases of the Circulatory System the main constituents are various diseases of the Heart.

As regards the seventh and eighth groups no comment is necessary save reference to the fact that the proportional mortality from "Undefined and Unspecified Causes" in Dublin is more than double that of

London. This can be attributed only to less accurate specification of the cause of death as given in death certificates.

It appears, therefore, that Dublin has a proportionally higher mortality than London from a considerable number of diseases; and examination of the figures in the foregoing table shows that the diseases which mainly account for the habitually high death rate in Dublin are Phthisis and other Constitutional diseases, diseases of the Respiratory System, and diseases of the Brain and Nervous System.

The foregoing account of the diseases that mainly contribute to the habitually high death rate in Dublin is based on the statistics of the five-year period, 1894-8, so as to avoid the misleading inferences that might arise from the consideration of the mortality statistics of a single year only. It is, however, desirable to refer particularly to the year 1899, since it was characterized by a general death rate of 33.6 per 1,000 of the population, a rate largely in excess of the mean death-rate during the period 1894-8. Nearly half of this excess in 1899 was due to Measles, while the remainder was referable mainly to increase in deaths from diseases of the Respiratory System and from Constitutional diseases. The increase by mortality from Respiratory and Constitutional diseases was probably, in part at least, due to ailments associated with and following upon attack by Measles. There was also material increase in the number of deaths from Diarrhoea, the death rate from this cause having been 1.6 per 1,000 in 1899, whereas the mean yearly death rate from Diarrhoea during the period 1894-8 was 0.97 per 1,000.

A considerable amount of information is furnished also by the Registrar-General as to the mortality during the five years 1894-8 in each of the Registration Sub-districts of Dublin.\* From calculations based on the figures supplied by the Registrar-General it appears that the districts known as South City No. 1, South City No. 2, and North City No. 2 have a considerably higher death rate than Dublin as a whole; while the districts known as North City No. 1 East and South City No. 4 have the lowest death rates of any in Dublin. The most striking feature in the mortality figures of the three first-mentioned districts is their marked excess in the death rate from Respiratory diseases as compared with the death rate from this cause in Dublin as a whole. There is marked excess of mortality from Phthisis and the Constitutional diseases in the North City No. 2 District and South City No. 2 District; while there is also some excess of mortality from these causes in South City No. 1 District. Diseases of the Nervous System are also in considerable excess in North City No. 2 District and in South City No. 1 District, and also in excess, although to a less degree, in South City No. 2 District. South City No. 1 District is also remarkable for its high Zymotic death rate, mainly due to deaths from Diarrhoea and the class of Zymotics named "Other Zymotic Diseases."

The distribution of Enteric Fever, as indicated by the death rates from this cause, in the several Registration Sub-districts of Dublin, also merits consideration. There are three Registration Sub-districts in which the death rate from Enteric Fever exceeds that from this cause in Dublin as a whole. These three are North City No. 3, South City No. 4, and South City No. 2, the rate being highest in the first-named. North City No. 1 East District has much the lowest death

\* The mortality figures regarding these districts are not to be accepted as being in all cases strictly accurate. Since the Census of 1891 on the figures of which these rates are based there has been much closing and also demolition of poor class houses in Dublin; and this may have led to a distribution of the population in these districts somewhat different from that which obtained at the Census.

rate from Enteric Fever. For convenience of reference the mean death rate from this cause in each district during the five years 1894-8 is here given—

North City, No. 1 East District,	0.29	per 1,000 of population.
" " No. 1 West District,	0.42	"
" " No. 2 District,	0.45	"
" " No. 3 District,	0.54	"
South City, No. 1 District,	0.40	"
" " No. 2 District,	0.47	"
" " No. 3 District,	0.40	"
" " No. 4 District,	0.52	"
The City of Dublin,	0.45	"

#### SANITARY CIRCUMSTANCES AND CONDITION OF DUBLIN.

The average density of the population in Dublin as ascertained by dividing the population (according to the Census Return of 1891) by the number of statute acres, appears to be 65.6 per acre. The Registrar-General stated that he found this to vary in the eight registration districts from 46.2 persons per acre to 124.4 persons per acre. These figures cannot be relied on to any great degree of exactitude, owing to the only information as to the population of each of the registration districts being that afforded by the returns of the Census taken in April, 1891, since when, not only may the total population have increased or diminished, but also the relative numbers of persons in the several registration districts have certainly changed. For example, in the case of South City No. 2 District, in which large clearances of houses have been made in recent years by the Corporation, and under the private Act obtained by Lord Iveagh for the formation of a public park.

At the time of the Royal Commission, the drainage of the houses, even in the best streets, was very defective, since then over 6,000 new communication pipes of glazed earthenware have been laid by the Corporation from the house drains to the public sewers.

From the evidence laid before us we are of opinion that a large number of the connections made between the houses and the main drains between 1860 and 1880 were imperfectly laid, and that a great many of them still in use should be taken up, and reconstructed in a proper manner.

The Royal Commission of 1879-81 stated that they considered the first of the conditions exercising the most injurious influence upon the health of Dublin to be the state of the tenement houses, their overcrowding, their defective drainage, and the absence of any organized system for the removal of filth from their surroundings.

The tendency of the evidence given at our inquiry is to confirm the conclusion arrived at by the Royal Commissioners, although it was shown that considerable improvements have been effected in the drainage and removal of filth from houses of this class. Undoubtedly, there is great room for further measures in connection with them, in order to improve the general health of the city. This we shall refer to later on.

Scavenging and removal of refuse of all kinds.

To those who remember the little that was done in regard of such cleansing twenty years ago in Dublin, the improvement since effected must be apparent, although we shall have to point out further on several improvements under this head, which we think, should be taken in hand without delay.

The position of the barge *Edwards*, by which some 300 tons of refuse are daily removed for discharge out at sea was generally condemned, and the nuisance caused by the conveyance of refuse, and the loading of the barge therewith, was strongly commented on by some witnesses.

Sewerage.

A Main Drainage system is at present in process of construction by which, when completed, all the sewage of the city will be intercepted, and conveyed by main outfall sewers to purification works at the Pigeon House Fort. This should completely remedy the state of the River Liffey, which is liable to be offensive at low water, especially in the summer months.

Water supply.

As to the Vartny Water Supply we are satisfied that it is of the most excellent quality.

Hospital accommodation.

The hospital accommodation for infectious cases in Dublin is larger in proportion to the population than is the case in any English city. Among the hospitals, Cork-street Hospital and the Hardwicke Hospital are reserved for cases of fever and other infectious diseases (including pneumonia), and it has been only at very rare intervals that any difficulty has arisen in obtaining admission for such cases.

There are 266 beds in Cork-street Fever Hospital, and there are 26 in the Convalescent Home at Benevin attached thereto. This Home is, however, used only for scarlatina.

This hospital used to take in patients from the North and South Dublin Unions, the Guardians contributing a fixed charge for each case of 2s. per head per day. There is no capitation fee from the Corporation, but there has been an annual grant. Unfortunately the effect of the recent legislation by the Local Government Act, 1898, has been to make any payments by the Guardians to this hospital for cases from those Unions *ultra vires*, and the Guardians have been obliged to discontinue them. The consequence was, that during the recent epidemic of Measles, many cases from the city, such as would previously have been treated at Cork-street Hospital, had to be dealt with in the homes of the patients to their detriment, and that of the other residents in their houses.

This state of things has, we think, had a decided effect in increasing the death rate in 1899. One instance was mentioned in which thirteen cases of Measles had to be treated in one tenement house, because there was no hospital accommodation for them at Cork street or elsewhere.

The present provision made for conveying cases to hospital appears to be satisfactory.

There is no Consumption Hospital in Dublin, although some cases in the advanced stages of this disease are admitted into the Royal Hospital for Incurables, at Donnybrook, and the Hospice for the Dying, at Harold's-cross. There is no separate hospital for Small-pox in Dublin, nor has any Convalescent Home for infectious cases been established under Section 155 of the Public Health (Ireland) Act, 1878.

Baths and wash-houses.

The Corporation have constructed two swimming baths, a number of reclining baths, and a large wash-house, with complete arrangements for washing and drying clothes. Some witnesses consider that the erection of more public baths, or at any rate of more wash-houses,

would conduce to an improvement of the public health, and we agree with them.

The Corporation arrangement for this work appears to be very efficient and satisfactory.

There are two such depôts, one at Marrowbone-lane, the other at Stanley-street.

Complaints have been made as to these, and evidence was given as to the offensive condition of the former.

There is a general feeling that private slaughter-houses should not be permitted within the city.

There are now fifty-six in Dublin, and some of them are well conducted, others are not well kept. Sir Charles Cameron, however, expressed himself as not opposed to properly conducted private slaughter-houses in the city; but he added that effective supervision of a considerable number of private slaughter-houses is impossible; a view with which we agree. The Corporation acquired powers under their local Act of 1896 which enabled them to buy up the unsanitary slaughter-houses, and as they did not proceed to put these powers in force, the Magistrates refused to convict when proceedings were taken under the general provisions of the Public Health Acts.

Evidence was given on behalf of the Victuallers' Association that their slaughter-houses were well conducted, and objections were made by them to the use by the butchers of the Corporation Abattoir on the north side of the city. We are unable to attach any weight to these objections.

Disinfection of houses and clothes.  
Corporation refuse depôts,  
Slaughter-houses.

#### CERTAIN CAUSES OF DEATH IN RELATIONSHIP WITH PARTICULAR CONDITIONS IN DUBLIN.

Much evidence was laid before the Committee as to conditions in Dublin which might be regarded as prejudicial to the public health. The variety of these, instanced by one or more witnesses, is very great. Some of the conditions so instanced, however, although likely to give rise to nuisance, and therefore calling for remedy, cannot be regarded as likely to lead to fatal illness, or even to ill-health; while others can have but remote concern with the diseases that more especially contribute to the high death rate of Dublin.

Again, there are still other conditions, alleged to be among the causes of excessive mortality in Dublin, which are not to be held accountable for any share in this excess. Prominent among these is the public water supply derived from the Vartry. The weight of evidence is strongly in favour of the purity of this water, and its suitability as a domestic supply. Nor do the mortality statistics furnished by the Registrar-General, considered in the light of the distribution of disease in the several sub-districts of the city, lend support to unfavourable criticism of the Vartry water. For this supply serves the whole city uniformly; while diseases, such as Enteric Fever, sometimes referable to impure water, are unequal in their degree of incidence on the various districts of Dublin. The suggestion that use of this water leads to undue prevalence of Rickets, receives no support from the statistics given by the Registrar-General on this subject, for the number of deaths referred to Rickets in Dublin during the five years 1894-8 averaged little more than three per year. These figures are so small that much importance is not to be attached to a rate based upon them; but such inference as may be drawn from the comparative

death rates from this cause in Dublin and in London, respectively, are in favour of Dublin. In London the death rate from Rickets during the five years 1894-8 was five times as great as that in Dublin during the same period. But, indeed, the belief that absence of lime from drinking water may give rise to Rickets is no longer generally held.

Considerable stress also was laid on intemperance as conducive to high mortality in Dublin. Intemperance is, in all towns, directly, as well as indirectly, causative of death. The question, therefore, is not whether intemperance contributes to the death rate in Dublin, but whether its contribution is relatively greater in Dublin than in other large towns. The figures given by the Registrar-General as to deaths directly referable to intemperance in Dublin, show that the death rate from this cause is somewhat less there than it is in London. Intemperance is also indirectly contributory to the death rate mainly by causing increase of diseases of the liver (included in diseases of the Digestive System), of the Nervous System, of the Urinary System, and in some degree of Phthisis. The death rate from all these groups of diseases is higher in Dublin than in London. It should be noted, however, that the excess is small as regards diseases of the Urinary System and of the Digestive System. Nevertheless, in view of the complexity of other causes that play a part in raising the death rate from these groups of disease, coupled with absence of excess in deaths directly referable to alcoholism, it cannot properly be accepted that there is a relatively greater amount of intemperance in Dublin than in London.

Undue stress also was laid by several witnesses on the density of population on area in Dublin as a condition calculated to be detrimental to the public health. It is estimated that in Dublin there are 65.6 persons per acre; while in No. 2 South City District the proportion reaches 124.4 persons per acre. It is a matter of general agreement that high density of population upon area is, other things being equal, likely to be associated with a higher death rate than a low density of population upon area would be; but so complex are the circumstances of life in civilised communities that further inference than this is likely to prove misleading. As an instance of the unreliability of guidance by density of population, unqualified by other considerations, may be cited several London districts that have a much higher degree of density of population than Dublin, or any of its Registration Sub-districts, along with a markedly lower death rate; while the Borough of West Ham, with an estimated density of 60.9 persons per acre in 1898, had in that year a death rate of only 15.4 per 1,000 of the population. Indeed, in Dublin itself, the death rates in the several Registration Sub-districts are, as will be seen from the Registrar-General's statistics, far from parallel with density of population.

But the facts which came to the knowledge of the Committee clearly establish the existence in Dublin, in an exceptional degree, of several conditions which are wont to be associated with a high rate of mortality. Especially noteworthy among these are the insanitary circumstances in which a considerable proportion of the population of Dublin lives. Large tenement houses, each room occupied by a separate family; the house itself in a state of dilapidation; water supply inconvenient of access; dirty common staircases; inadequate water-closet accommodation in a foul state; back yards ill-paved and littered with refuse and excrement; are conditions of life in Dublin which are frequently encountered in connection with the dwellings of the poorer classes. These condi-

tions tend to the production of a state of lowered vitality favourable to the contraction of disease, and to fatal result of disease when contracted. They also directly encourage the spread of maladies of the infective class, which includes not Zymotic diseases only, but also ailments such as Phthisis and other forms of Tubercular disease, which are excessively prevalent in fatal forms in Dublin. Conditions favourable to strict cleanliness in the home are of the first importance in the limitation of the spread of Phthisis, and these favourable conditions find no place in most of the houses occupied by the Dublin poor. And in this connection it has to be borne in mind that the proportional amount of poverty in Dublin is very large, so that these unfavourable conditions associated with the houses of the poor are widely spread throughout the city. The poverty of much of the population of Dublin is in itself, apart from the insanitary conditions referred to, a serious factor in the high death rate of the city. The concomitants of poverty, more especially insufficient and unsuitable food and scanty clothing, both directly and indirectly exert a marked influence upon the death rate.

In considering the relationship between the death rate and the sanitary circumstances of a town, it is usual to pay particular attention to the mortality in Infant Life and also to the mortality from Phthisis, Diarrhoea, and Enteric Fever.

The Infantile death rate in Dublin, while somewhat higher than that of London, is but little in excess of the average rate from this cause in the thirty-three large towns of England and Wales, and, is, indeed considerably less than the Infantile death rate of some of these towns. This comparatively satisfactory state of matters may, as suggested in evidence to the Committee, be attributable in part to climatic conditions being less favourable to Summer Diarrhoea in Dublin than in some other places. This malady is apt to be a prominent cause of death among infants. In part also it may be referred to the practice among Dublin mothers of the poorer classes of suckling their children throughout the early months of infancy instead of having recourse to the feeding bottle. This practice not only provides infants with the nourishment best suited to them, but also tends to lessen the risk of their contracting Diarrhoea.

The Diarrhoea death rate in Dublin also stands in much the same relation to that in London and in the thirty-three large towns of England and Wales as does the Infantile death rate in Dublin to that in these places, and the comments made under the latter head concerning Diarrhoea afford some explanation of the reason why, with a high general death rate, the death rate from Diarrhoea is nevertheless not relatively high in Dublin.

The death rate from Enteric Fever in Dublin is, as already noted, very high. With our present lack of accurate knowledge regarding the manner of propagation of Enteric Fever it is not possible on the evidence submitted to the Committee to account for this. The suggestion made in evidence that the continued excessive prevalence of Enteric Fever in Dublin is intimately associated with certain conditions of the soil may be accepted as probably correct, but it is by no means clear what these conditions are. Of recent years organic pollution of the soil has come to be looked upon as favouring the life and growth of the specific organism of Enteric Fever in that medium; and undoubtedly in Dublin the liability of the soil to pollution is great. The soil on which Dublin stands is polluted by leakage from defective drains and by plentiful soakage of foal matters from the surfaces of filthy

house-yards and ill-cleansed lanes and alleys. But, although there is agreement that the influence of such conditions is for evil and that every endeavour should be made to lessen or remove them, it is clear that even if a polluted soil favour the spread of Enteric Fever, it is far from being the only soil condition to be thought of in this way. For in Dublin it is not in the districts where potentialities of soil pollution are greatest that Enteric Fever most abounds. It was also stated in evidence before the Committee that those parts of Dublin where the soil is gravel suffer more from Enteric Fever than those where the soil is clay. But the evidence as to the disposition of the gravel and the clay underlying Dublin is not sufficiently exact to permit definite conclusion on this point; a comment which also applies to the evidence, in this connection, regarding the level of the sub-soil water in Dublin. Such facts, however, as were submitted to the Committee regarding the latter point went towards showing that the fever is less prevalent where the sub-soil water is nearer the surface.

The death rate from Phthisis in Dublin is also excessive. To this a multiplicity of causes contributes. The conditions unfavourable to cleanliness in the home, already referred to, directly encourages the spread of the disease from person to person. Another favouring circumstance is the low state of vitality engendered by poverty, of which there is so much in Dublin; aided, it may be, by resort to stimulants on the part of the insufficiently fed. The conditions, also, of many cow-sheds and dairy yards in the city are such as to favour Tuberculosis among cattle kept in these places; and therefore to give rise to serious risk of disseminating Phthisis and other Tubercular diseases by means of milk. In less degree like danger arises from the use of meat derived from ill-kept private slaughter-houses, of which there are not a few in Dublin.

In addition to the mortality due to deaths among infants, as well as to Diarrhoea, Enteric Fever, and Tubercular diseases, it is desirable also to make particular reference to the high mortality in Dublin from Respiratory and from Nervous diseases. The high death rate from Respiratory diseases may be referred in part to the lessened resisting power caused by insufficient food and clothing. Partly also, however, it is attributable to the home conditions that so often, in Dublin, favour spread of infection. For no small share of Respiratory disease follows upon attacks of Influenza and Measles; while Pneumonia itself, which is a large contributor to this group of diseases, is in a large proportion of cases an infectious disorder.

The low vitality of a considerable section of the population is also to be reckoned as aiding the high death rate from Nervous diseases; to which also the injudicious use of alcohol may contribute, although, for reasons already given, it is difficult to lay stress on this factor. But this excessive mortality from Nervous diseases in Dublin is more apparent than real, inasmuch as the excess of the Dublin rate over the London rate is due to deaths from "Convulsions." The death rate from "Convulsions" in Dublin is 1.74 per 1,000 of the population, while that in London is 0.41 per 1,000 of the population. Accordingly, the mortality from Nervous diseases is not so great as would appear, since "Convulsions" is a loose expression frequently indicative of want of accurate diagnosis. More correct diagnosis would lead to the classification of many deaths thus described in groups of disease other than Diseases of the Nervous System.

Regarding the mortality in Dublin from the whole group of Zymotic diseases some comment is necessary. From certain maladies of this



group Dublin suffers less, from others more, than do other large towns. In Dublin the necessity for hospital isolation as a means of lessening prevalence of those diseases is greater than in most towns, because of the relatively large proportion of the population without satisfactory means of isolation of the infectious sick in their homes. It appeared in evidence, indeed, that the number of beds in hospitals for infectious diseases is considerably larger in proportion to population in Dublin than elsewhere. But it also appeared that at times these beds are not all available, as was the case in 1899. The sufficiency of hospital-accommodation for infectious sickness in Dublin would seem, therefore, to be less certain than it appears to be, although such accommodation has at no time fallen below that of other large towns. Inadequate means of isolation of the infectious sick, it need hardly be pointed out, constitute a grave hindrance to control of epidemic disease. Hindrance also arises in Dublin from lack of power on the part of the Sanitary Authority to close day schools with a view to preventing spread of infectious disease. This measure is of undoubted utility in some circumstances, and might have proved of service in checking the spread of the Measles epidemic, which, in 1899, contributed so largely to the Dublin death rate. The absence, too, of compulsory notification of infectious disease in certain of the townships, which are essentially suburbs of Dublin, and in some adjoining rural districts, adds to the difficulties of the Sanitary Authority in endeavouring to cope with epidemic outbreaks of disease.

From several other diseases than those that have been particularly considered the mortality of Dublin is somewhat in excess of that usual in large towns, but not in such degree as to call for special reference.

#### MEASURES FOR IMPROVING THE HEALTH OF THE CITY.

We now come to the second point referred to us—that is, what measures we recommend for adoption with the view of improving the health of the city.

First, as to “tenement houses.” Any improvements in these numerous and widely scattered insanitary dwellings must react favourably on the health of Dublin. The walls and structural parts of many of the large houses, which were formerly the residences of only one family each, but which are now occupied by a number of separate families, are in fairly good order. But the structural conditions of many tenement houses more recently built are much less favourable. In the inadequacy of sanitary accommodation for these houses, dangers to public health also arises. We are of opinion that provision of at least one water-closet should be made for every two families, and that water should be supplied to each floor. It will take time for these improvements to become general. If, however, commencement be made at once it is to be expected that they will spread with a markedly beneficial effect directly on the health of the thousands inhabiting these houses, and indirectly the health of the population generally. We are aware of the difficulties as to expenses of such improvements and of providing for displaced persons, but these will have to be faced. The obvious remedy for the latter difficulty is the erection of new dwellings, and with the object of providing ways and means we are of opinion that loans for that purpose should not, to their *full* extent, restrict the margin of borrowing power under the Public Health Act. At the same time we would not wholly free them from the limits imposed, but only

to such extent as the Local Government Board for Ireland may in each case fix.

With regard to the cost of compulsorily acquiring sites for this purpose it does not appear to be generally known that recent legislation (Public Health (Ireland) Act, 1896, 59 & 60 Vic. Ch. 54, Sec. 8) has very much reduced the liability of a sanitary authority to pay more than the fair market value of the lands thus acquired, and the enormous expenditure for such purpose in Dublin as referred to in the evidence cannot occur again.

The question of the housing of the poor of Dublin is one of magnitude. The provision of an adequate number of healthy dwellings by way of relief for the present overcrowding of population under unhealthy conditions in congested districts of the city, must, of necessity, be on a considerable scale, and would probably involve several schemes for this purpose. Accordingly, in schemes for the provision of dwellings for the poor, there would be advantage in selecting sites in neighbourhoods less densely populated than those now inhabited by the class for which such provision should be made. These sites could best be obtained outside the city, in localities within easy access of the principal business quarters of Dublin. In these schemes it should be borne in mind that healthy dwellings are especially needed in Dublin for the very poor. Houses, therefore, intended with this object should be of the plainest kind, in order that such schemes may not entail heavy loss upon the ratepayers.

It appears from the evidence that in some cases the letting of stables as dwellings is attended with bad results, and we think that the Sanitary Authority should have direct control in this matter.

A large number of lanes and alleys in Dublin had not been scavenged by the Corporation prior to the present year, when, however, on the suggestion of the Local Government Board, this work was immediately taken in hand by the Corporation, and is now being carried out. The failure of the Corporation until recently, to scavenge these lanes and alleys, would appear to have been due to the fact that they have not taken them "in charge," so that many of them are very defective as regards sewerage and paving. It is clearly in the interests of the public health that all streets, lanes, and alleys in the city, whether in charge of the Corporation or not, should be scavenged by them. This measure would be facilitated by the sewerage, levelling and paving of these streets, lanes, and alleys, where necessary; works which the Corporation are empowered to compel owners to carry out, by Section 28 of the Public Health (Ireland) Act, 1878.

With regard to the removal of house refuse, we consider there is room for great improvement:—

1. The removal from tenement houses occupied by more than one family should be *daily*.

2. All dust bins should be covered.

3. All dust carts should be covered and have an arrangement by which the bins may be emptied into them without the contents being scattered, and, where necessary, provision should be made for the removal of the bins and the substitution of another bin.

The present methods of disposal of street scavenge and house refuse are liable to give rise to serious nuisance. For the same reason the position of the barge *Eblana* is objectionable, as also are the situations of the refuse depôts in Marrowbone-lane and Stanley-street. These

conditions call for the immediate attention of the Corporation, who should consider the question of provision of additional destructors, and whether a more suitable position can be found for the *Ekblana*.

The completion of the system of main drainage, now in course of construction, at as early a date as possible, is much to be desired. Systematic inquiry as to the condition of house drains in Dublin, with a view to detection of the defects which are suspected to exist in relation with many of them, should be continued by the Corporation, who have already done useful work in this direction.

With regard to dairy yards, we are of opinion there is no valid objection to their being in the city, provided that they are not in congested districts, and the regulations of the Corporation of Dublin, relative to dairies, cow-sheds, and milk-shops are strictly enforced, which we consider has not hitherto been the case.

Every encouragement should be given to the sterilization of milk in Dublin, particularly in the warmer seasons of the year, when the use of sterilized milk would serve as a check on the dissemination of Enteric Fever, and on the prevalence of diarrheal disease among young children.

As to private slaughter-houses within the city, we think they should be reduced in number by degrees, and that the bye-laws as to them should be rigorously enforced. It would be very desirable that another abattoir should be provided for the south side of the city.

It appears from the evidence that improvement of the public health would result from the provision of more baths and wash-houses on both sides of the city.

It was the general opinion of all witnesses who dealt with this subject that notification of infectious diseases should be made compulsory in the districts surrounding Dublin. In this opinion we concur, and would point out that such notification is already compulsory throughout Great Britain, as it ought to be throughout Ireland.

Notification of Diseases Act, 1889 (52 & 53 Vict., cap. 72).

It was also stated by many of the witnesses that Tuberculosis should be added, under the provisions of Section 7 of the Act, to the diseases specifically mentioned in Section 6 of that Act.

There are serious administrative difficulties in the way of making notification of all tuberculous diseases, or even Phthisis alone, compulsory; but a system of voluntary notification of Phthisis may be expected to prove workable and to give useful results. Such a voluntary system should, at the outset, be of limited application, as in Manchester and Liverpool, where this measure is now being tried with apparent success.

Evidence was also given to the effect that there are schools in Dublin which are in an unhealthy condition and provided with inadequate sanitary accommodation. The Committee, in the course of inspections made by them in various quarters of the city, visited several schools and inquired into their condition. Most of them were in fair sanitary state; with, however, one exception, in which there was serious overcrowding. But in nearly all the schools visited the amount of sanitary accommodation was found to be inadequate; and usually there was no provision of lavatory basins for the use of children attending the school. In some instances, too, the area available as play-ground is much too small. In these respects there is great room for improvement. In addition to the benefit to health that would result from improvement in these directions, there would also accrue educational advantage in the greater appreciation of habits of personal cleanliness that would be brought about by proper sanitary and lavatory accommo-

Sanitary condition of schools.

dation. Instructions in the elementary rules of hygiene would also be helpful to this end. The hours of attendance also are calculated to exert a prejudicial influence upon the health of children attending school. At present these hours are from 9.30 a.m. to 3.30 p.m., with only half an hour allowed for food and recreation; this interval is too short, and it appeared in evidence that, as a result, children are apt to be insufficiently fed, which would render them less fit to withstand the strain of the too continuous period of educational hours.

**Closing of schools.**

In England the Sanitary Authority of its own motion may, under Article 88 of the English Education Code for Day Schools, 1899, on the appearance of an epidemic of infectious disease close any primary school in its district, but there is no such power in Ireland.

In Dublin the Public Health Committee advise the School Managers at once on becoming aware of any of the scholars being resident in a house in which there are cases of infectious disease, and such children are, as a rule, forbidden to come to school for the time being.

Some School Managers are against the power of closing a school during an epidemic being given to the Local Authority and this, for various reasons into which we need not enter; but we see no reason why the Local Authority here should not have the same power as Local Authorities have in England.

**Sanitary staff of the Corporation.**

The Inspectorial Staff of the Public Health Department consists of:—

Sanitary Sub-Officers,	.	.	27
Inspector of Food,	.	.	1
Inspector of Slaughter-houses,	.	.	1
Inspectors under Food and Drugs Act,	.	.	3
Inspectors of Dairies,	.	.	5
Temporary Lady Inspectors,	.	.	4

---

41

Sir Charles Cameron stated that one-third of the Inspectors' time is wasted in the Police Courts waiting for cases to come on. This, of course, reduces the efficiency of the staff as judged by its numerical strength. He suggests that some means might be devised by which this waste of the Inspectors' time might be prevented, or at any rate greatly reduced. He also suggests that the Magistrate's decision on a Public Health summons should be final and without appeal, for the purpose of saving time in dealing quickly with nuisances.

Dr. Hope, Medical Officer of Health for Liverpool, considers this Inspectorial Staff sufficient if the quality of work done by the Inspectors is good. He also stated that the Inspectorial Staff should be selected from persons whose previous occupation and training especially fit them for the discharge of their duties.

Professor W. R. Smith, Medical Officer of Health for Woolwich, also considers the number of the Inspectorial Staff to be sufficient, but more of them ought to be women. He also agrees with Dr. Hope as to the selection of Inspectors.

We would direct attention to Professor Smith's evidence, in which he says that, in his opinion, work connected with Architectural, Finance, and Engineering Departments should be separated from the Public Health Department.

**Bye-laws.**

Several suggestions were made as to additions and alteration of bye-laws, but as we understand the Corporation are at present engaged

preparing new bye-laws, we do not think we need refer further to the matter here.

Evidence was given by several witnesses, notably by the Right Honourable the Lord Mayor, that additions to and alterations of the law as contained in the Public Health Acts would conduce to the more effective working of those Acts, and thereby assist in improving the public health.

New legislation.

It has been suggested that the following changes should be made:—

(1.) In Section 21 of the Public Health Acts Amendment Act, 1890, to insert after "dwelling-houses," "or by two or more families occupying one dwelling-house." (The reason for proposed addition is that it has been decided on appeal to the Superior Court that this Section does not apply to the Dublin tenement houses).

(2.) In Section 2 of the Public Health (Ireland) Act, 1878, after the definition of "land and premises" to add "the word premises for the purposes of the sections of this Act relating to nuisances includes and applies to a single room."

(A magistrate has decided in a Dublin case that a single room did not mean "premises.")

(3.) Power should be got to prevent houses being turned into tenement houses until they are certified as structurally fit for that purpose.

(It seems doubtful that this could be effected by a bye-law under Section 100 of the Public Health (Ireland) Act, 1878.)

(4.) For the purpose of Section 100 of the Public Health (Ireland) Act, 1878, the word "owner" shall mean "landlord," and the word "occupier" shall include "roomkeeper."

(5.) Power should be given to limit the number of inhabitants in a house.

(A bye-law made under the Public Health (Ireland) Act, 1878, cannot prescribe or enforce a specified air-space for each occupant.

The number of occupants of a "tenement house," however, can be limited by a bye-law under Section 100.)

(6.) To require a licence to be taken out annually for each tenement house.

(7.) That owners of tenement houses should be compelled to appoint a responsible caretaker.

(8.) There should be a special magistrate, or a defined time, set apart for sanitary cases.

(9.) Power should be given to inspect country dairy yards from which milk comes into Dublin.

(10.) Compulsory notification under 52 & 53 Vic. c. 72 should be enacted for the whole of Ireland.

(11.) There should be power to close public day schools during epidemics.

(12.) That loans for purposes of the housing of the Working Classes Act, 1890, should not be reckoned against the borrowing powers of the Corporation.

We agree with most of these proposed changes so far as fresh legislation is required, but we think that loans referred to under heading

(12) should only be exempted to a certain extent and not in full. We do not agree with No. (4), which we think would introduce an element of confusion, and we think No. (5) is unnecessary, as Section 100, Public Health (Ireland) Act, 1878, provides for the limitation of numbers in tenement houses. We also think that the general application of No. (7) would be impracticable.

The evidence laid before us leads to the belief that the provision of Section 11 of the Public Health (Ireland) Act, 1878, whereby each Dispensary Medical Officer is obliged to act as Medical Officer of Health for his Dispensary District, has worked unsatisfactorily in Dublin, and should be altered.

## RECOMMENDATIONS.

1. Tenement houses. That in "tenement houses" water should be laid on to each floor, and separate sanitary accommodation should be provided for at least every two families.
2. Stables. That no stables should be let as dwellings without a licence having been first obtained from the Corporation.
3. Housing of the working classes. That schemes for housing a large number of the labouring and poorer classes should be taken in hand at once, and if suitable sites cannot be obtained in the city powers should be given to the Corporation to acquire sites outside the city whereon the buildings can be erected. These blocks of buildings should be erected before any further clearances of areas be carried out.
4. Street scavenging. That all streets, lanes and alleys in the city, whether in charge of the Corporation or not, should be scavenged by them.
5. Removal and disposal of refuse. That all dust bins be covered and emptied into covered carts, and that the contents of dust bins from tenement houses be collected daily. That an additional "Destructor" be provided at Marrowbone-lane, and the number of cells at Stanley-street Destructor be largely increased. That a more suitable berth should be got for the barge *Eblana*.
6. Dairy yards. That the regulations as to dairy yards and cow-sheds be most rigorously enforced.
7. Slaughter houses. That an abattoir be provided for the south side of the city and the number of private slaughter-houses should be gradually reduced.
8. Bath and wash-houses. That more wash-houses and swimming and reclining baths be erected in several parts of the city.
9. Sanitary condition of public elementary day-schools.
  - (a) That a sufficient amount of floor space and cubic space should be provided in all instances.
  - (b) That a sufficient area of play-ground should be provided in each case.
  - (c) That instruction should be given in the elementary rules of hygiene.
  - (d) That the present hours of attendance be altered so as to allow a proper interval for recreation and food between morning school and afternoon school.
  - (e) That every school should have adequate sanitary accommodation and a sufficient number of lavatory basins properly equipped.
10. Closing day-schools. That the Corporation should have power to close day schools during epidemics.
11. Notification of infectious disease and phthisis. That notification of infectious disease under the Act of 1889, which is in force in Dublin, should be made compulsory at least in all the districts surrounding Dublin. We further recommend that a system of

voluntary notification of Pulmonary Consumption should be adopted in Dublin as in Manchester and Liverpool.

That arrangements should be made by which the vacant beds in the existing fever hospitals may be made available whenever required for cases of infectious disease. 12. Hospital accommodation.

That these hospitals should not be used for Smallpox, for which disease a separate hospital should be provided sufficiently distant from populous neighbourhoods. That convalescent homes for patients recovering from infectious diseases should be provided.

(1.) That the duties of Medical Officer of Health should no longer be discharged by the sixteen Dispensary Medical Officers (as referred to on page 20); and that, in future, these duties should be discharged by an Assistant Medical Officer of Health, who should receive an adequate salary, and who should give his whole time to the duties of his office. 13. Sanitary staff.

(2.) That, in future, all persons appointed by the Corporation to act as Sanitary Inspectors, should be specially fitted for the discharge of their duties by their previous occupation and training and that the number of Lady Inspectors should be increased, and their appointments made permanent.

(3.) That all work now done by the Public Health Department, which properly is of an engineering or architectural nature, should in future be under the control of the Borough Engineer or the City Architect.

That new legislation should be introduced, as suggested above at pages 19 and 20, with the exceptions already indicated. 14. New legislation.

That the legal procedure in cases of prosecution for sanitary defects and nuisances should be materially shortened, and that there should be no appeal from the Magistrate's decision on matters of fact.

Section 11 of the Public Health (Ireland) Act, 1878, by which the Medical Officer of a Dispensary District is constituted the Medical Officer of Health for that district, should be amended, so as to enable effect to be given to Recommendation 13 (1.)

We again express our thanks to the witnesses who came before us, and especially are we indebted to the Registrar-General, not only for his evidence, but also for the voluminous returns which, at a time when we know there is a great pressure in his work and office, he has so kindly prepared for us.

We propose to print the Appendices, and issue them, with maps, as soon as we can.

All this we submit to you as our Report.

CHARLES P. COTTON, *Chairman.*

JOSEPH M. MEADE, *Alderman.*

JOHN WILLIAM MOORE, M.D., *President.*  
Royal College of Physicians of Ireland.

R. L. SWAN, *President of the Royal College of Surgeons in Ireland.*

THEODORE THOMSON.

P. DOWD, *Alderman.*

W. H. WILSON, *Secretary.*

Dublin, 14th May, 1900.

## BELFAST.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE COUNTY BOROUGH.

By DR. C. J. CLIBBORN.

POPULATION (according to the Census of 1901)=348,965.

**Situation.** Belfast is situated on the River Lagan, where that river flows into Belfast Lough, in the Barony of Upper Antrim, and includes in its boundaries the large suburb of Ballymacarret, in the County of Down, from which it is separated by the River Lagan.

**Extent, valuation, and population.** The old city comprised an area of 6,806A. 2R. 28P., 4,322A. 0R. 33P. being in County Antrim, and 1,668A. 3R. 22P. in the County Down, the remainder being tideway.

The acreage of the area added under the Belfast Corporation Act, 1896, amounts to 9,697A. 1R. 1P., of this area 5,814A. 2R. 8P. are on the County Antrim side, and 2,910A. 1R. 24P. on County Down side, the total acreage of the extended city being 16,503A. 3R. 29P., and the remainder tideway 972A. 0R. 39P.

It is estimated that there are between 71,000 and 72,000 inhabited houses, but this cannot be accurately ascertained until the Census returns have been completed. The estimated number of inmates to each house is 4·9.

**Annual birth and death rate, per 1,000 of the population.**

**Year.**  
1900

**Birth-rate.**  
31·2

**Death-rate.**

21·3 (General).

4·7 (Children under 1 year old).

2·1 (from principal Zymotic Diseases).

**RETURN** showing the number of cases of Infectious Diseases notified as having occurred in the several Dispensary Districts during the year 1900:—

District.	Typhus Fever.	Typhoid Fever.	Scarlet Fever.	Simple Continued Fever.	Puerperal Fever.	Small-pox.	Diphtheria.	Membranous Croup.	Erysipelas.	Total.
1. . . . .	-	83	15	117	4	1	9	16	37	285
2. . . . .	1	210	128	205	5	-	16	4	72	631
3. . . . .	-	372	109	130	14	-	26	6	80	737
4. . . . .	1	176	53	62	3	-	23	6	28	357
5. . . . .	-	73	21	25	3	-	3	1	20	149
6. . . . .	-	167	83	90	3	1	31	12	64	440
7. . . . .	-	8	1	3	-	-	1	-	-	13
8. . . . .	-	14	1	-	-	-	1	-	7	23
9. . . . .	-	94	28	16	1	-	10	5	14	163
10. . . . .	2	241	64	30	3	-	30	4	40	404
11. . . . .	-	124	54	53	6	-	61	2	25	285
12. . . . .	-	163	66	74	2	-	43	27	34	409
13. . . . .	-	51	20	19	-	-	71	4	9	174
<b>Total.</b>	<b>4</b>	<b>1,777</b>	<b>558</b>	<b>813</b>	<b>44</b>	<b>2</b>	<b>321</b>	<b>35</b>	<b>430</b>	<b>4,125</b>



Linen, Shipbuilding, Rope-making, Whiskey Distilling, Tobacco (Chief Industries.  
Spinning, Fancy Box-making, Jam-making, and Aerated Waters.

The older portions of the city are only a few feet above high tide, and the sub-soil is the alluvial deposit from the River Lagan on blue estuarine clay. Character of sub-soil.

In the higher portions there is a very considerable amount of red brick clay, and in portions of the outskirts of the city sandy sub-soil exists.

Prevailing winds are south-westerly.

During the year 1900 the rainfall was 42.13 inches.

Rainfall.

The present water supply is derived from Stoneyford and Woodburn. Water supply.  
A large portion of the gathering grounds consists of highly manured arable land, farm-houses and farms, consequently there has always been a considerable amount of pollution. In 1889 the Water Commissioners obtained Parliamentary powers to purchase these farms, and are at present engaged in completing the purchase, so that in a short time these areas should be clear of all pollution.

The Water Commissioners have their new scheme for obtaining water from the Mourne Mountains in an advanced stage, and it is expected that the Mourne water will be delivered in the city at an early date. This supply should be absolutely pure, there being no human habitations on the water-shed.

It is expected that the pure water supply will have a most beneficial effect on the general health of the city, and will result in a considerable reduction in the high death-rate from Typhoid Fever.

The estimated number of gallons of water which it is proposed to supply is about 11,000,000 per day, which, for a population of 359,000, would be at the rate of 31 gallons per head.

There are over 250 miles of streets and roads within the city.

Extent of roads.

In the City of Belfast there are 53,161 houses provided with water-closets, and 28,620 have the old privy arrangement; of the latter over 5,000 are being re-constructed annually and water-closets substituted, and the entire drains re-constructed on the most modern lines. Sanitary accommodation.

The main drainage and the subsidiary drainage works were completed some years ago at a cost of £320,000; subsequent to this Ligoniel District was entirely sewered, and the drainage works in the Windsor District are almost completed. The other districts which require draining are Lower Sydenham and Greenacres, the plans for which have been prepared, but the works have not yet been commenced. Drainage, sewage disposal, &c.

All the sewage of Belfast discharges into the sea at the outfall works at the northern extremity of the Harbour, where extensive experimental purification beds have been established on the bacteriological principle, and the results have been so far satisfactory, that plans and estimates have been prepared to extend this system to the entire sewage of the city at a cost of £80,000.

The practical result of the main drainage of Belfast is that the River Lagan, which was formerly a filthy cesspool in the centre of the city, is now a fairly clean river, and portions of the city which used to be flooded at the conjunction of high tides and heavy rainfalls, are now drained into the low-level sewer, which is connected with the pumping station.

The collection of the house refuse of Belfast is under the control of the House Cleansing Department, which consists of a Superintendent, 2 Clerks, 5 Inspectors, and 186 men, together with about 60 horses and drivers. The total amount of refuse collected annually is over 137,000. House refuse.

tons, of which about 34,000 tons of manure is sent to the country, and disposed of to the farmers. The dry ashes are deposited in the low-lying grounds adjoining the Harbour, and in tips on the outskirts of the city. A new refuse destructor, at a cost of £10,000, is now almost completed, and the work of burning this refuse matter, instead of depositing in tips, &c., will be proceeded with at once. Arrangements have also been made that the heat generated may, "if found desirable," be used for the purpose of generating electricity.

**Hospital  
accommodation.**

The hospital accommodation in Belfast for infectious diseases is provided by the Belfast Board of Guardians at the Union Workhouse. There is also a ward for infectious diseases at the Royal Hospital.

Within the past year the Belfast Corporation, acting as Port Sanitary Authority, have taken over from the Guardians the old Intercepting Hospital at the Twin Islands, and they have also constructed a new Infectious Diseases Hospital adjoining the same, thus providing accommodation for 28 or 30 cases of Seaborne infection.

The Public Health Committee have had plans prepared by Messrs. Young and MacKenzie for a complete Infectious Diseases Hospital at Purdysburn, but the work is not yet commenced. It is to be hoped that this matter will be taken into serious consideration at an early date; the subject has been lying over too long, as a thoroughly equipped Infectious Diseases Hospital is urgently required for Belfast.

**Sanitary  
staff.**

The Sanitary Staff consists of:—

Medical Superintendent Officer of Health,  
Executive Sanitary Officer,  
Assistant Executive Sanitary Officer,  
and

29 Sanitary Sub-Officers,

all under the control of the Public Health Committee, which consists of 15 members.

**Disinfect-  
ing appa-  
ratus.**

The Corporation of Belfast conjointly, with the Belfast Board of Guardians, have provided an efficient Disinfecting Apparatus (Messrs. Manlove, Alliott, & Company's); also one of the latest Disinfecting and Washing Machines (Hanna's of Glasgow).

The station is situate at the Union Workhouse, and the Workhouse Authority provide the necessary labour and the horse and van for the removal of the clothing, &c. The Corporation pay £300 per year as their portion of the expense, and any ratepayer can now have infected clothing, hedding, &c., disinfected, washed, and returned free of charge.

**Slaughter-  
houses.**

The public Slaughter-house is situate in M'Auley-street, but plans and estimates have been prepared for a new public abattoir on the most modern principles at Stewart-street, the construction of which will be commenced at an early date at a cost of £30,000.

There are at present five private slaughter-houses for cattle, and four for pigs, within the city; formerly there were thirty private slaughter-houses in this area, but the policy of the Public Health Committee has been to reduce the number to a minimum, and the probability is that private slaughtering in Belfast will cease altogether in a few years.

I may add, that to prevent butchers from outside having an advantage over those inside the city, and to protect the public against tubercular meat, all meat imported into the city from the surrounding districts has to be brought to a central station where it is carefully examined before being allowed to be exposed for sale.

**Lodging-  
houses.**

There are eighty-five licensed lodging-houses in the city, but the number is being reduced year by year, and will be still further reduced, as the Committee have almost completed a new model lodging-

house on the most approved principle at a cost of £8,000, with accommodation for 100 persons.

There are eighty seven bake-houses within the city, and these are inspected under the various Acts relating thereto; they are also inspected by the Inspector of Workshops under certain clauses of the Factory and Workshops Act.

There are 350 cow-keepers, and 1,559 purveyors of milk on the Register. The question of drafting new and more stringent regulations, especially in regard to the air space in cowsheds, has been before the Public Health Committee, but they have not yet been completed. During the past year forty summonses were issued for breaches of these regulations, and fines amounting to £35 2s. 6d. inflicted. One officer devotes his entire time to these duties.

The public cemetery is situated within the city on the Falls-road, in addition to which a new cemetery will soon be opened at Dundonald, and the Knock Graveyard has been taken over from the Belfast Board of Guardians. There are also six private cemeteries within the city.

### GENERAL RECOMMENDATIONS.

There are still many lanes and courts in the city which are in a very insanitary condition. In a large number of these little can, I think, be done, unless by the total removal of the houses and re-constructing the streets so as to admit a proper amount of air and light.

In my opinion the houses in Mullan's-place, Patrick's lane, Caroline-court, 1 and 3 Magee's-lane, 7, 9, and 11 Drake's-lane, part of Alexander-street, Davidson's-court, James'-pass, Gas-court, 2 to 8 Keenan-street, 3 and 5 Young's-row, 25 to 51 Union-place, should be closed, as they are unfit for human habitation. It might be desirable for the Sanitary Authority to take into their consideration as to whether certain small areas throughout the city should not be dealt with as unhealthy areas under the provisions of the Housing of the Working Classes Act, 1890.

I am strongly of opinion that the old privy and ashpit system of Belfast is a nuisance and injurious to the public health. As a rule, these privies and ashpits are in small yards and placed close to the windows of dwelling-houses. The work of converting the privies into water-closets should be proceeded with as rapidly as possible, especially in the case of houses where there is no back passage for the removal of filth, and the Sanitary Authority should seriously consider as to whether the present ashpits containing a large accumulation of ashes, vegetable rubbish, and sometimes liquid offensive matter, should not be replaced by some system more in accordance with modern sanitary science.

As portion of the drainage of Greencastle discharges into pools of stagnant water adjoining the Northern Counties Railway, I would recommend that the Scheme prepared for the drainage of this district be carried out without further delay; this subject has been under consideration for a long time, but beyond drawing out plans, nothing practical has yet been done.

A portion of the drainage of Lower Sydenham discharges into a series of stagnant pools along the east side of the Belfast and Bangor Railway; these ponds in hot weather are a nuisance and injurious to health, and I would recommend that the Scheme prepared for the drainage of this district be put into operation with as little delay as possible.

**Pig-keeping.** I think the bye-laws for the regulation of piggeries in Belfast should be revised, as 15 feet is too short a distance between a pig-stye and a dwelling-house; there should be at least 40 to 50 feet, as any shorter distance introduces conditions likely to be injurious to the public health in the case of piggeries situated in the confined back yards of a large city.

**Dairies and cowsheds regulations.** These regulations should also be revised, or the model regulations of the Local Government Board adopted; the veterinary inspection of all milch cows in dairy yards should also be provided for.

**Houses of the Working Classes.** I am informed that in Belfast a difficulty has arisen owing to the word "owner" in this Act not including the agent or person who receives the rents; hence, when the owner lives abroad, or in any place where the summons cannot be served upon him, this Act cannot be applied, and houses that should be closed are only temporarily repaired.

**Food and Drugs Act.** In my opinion, although the Inspector under these Acts is a most efficient officer, taking into consideration the area and population of Belfast, he is quite unable to carry out the work of this Department as it should be done, and I would recommend that additional officers be appointed.

**List of most insanitary streets.** Herewith I beg to attach list of streets in Belfast which are, I think, the most insanitary portion of the city, and which require special and immediate attention. I would draw special attention to the overcrowding and general want of air space in some of these streets, also the bad construction and position of the existing privies and ash-pits; very few of the latter are covered, and hardly any have cemented floors and walls, with the result that leakage occurs into the surrounding soil, which is always a serious source of danger to the public health.

Since my last report very much has been done in the way of replacing privies by water-closets, and closing up insanitary houses, but there is a large amount of work of this kind still to be carried out. There is also in Belfast a large number of houses where the contents of privies and ash-pits have to be removed through the dwelling houses, and this practice, as long as it exists, will probably be a source of infectious disease.

**Defective drains.** I have been informed that the result of systematic inspection of the house drains connecting with the main sewers of the city, which for some time past has been carried out, shows that many of these drains are defective. I understand a considerable number have already been reconstructed, but the remainder should, as soon as possible, be put in order.

Though the health of the city is far from what it ought and might be, still I think there has been a gradual but slow improvement within the last few years.

With regard to the officials connected with the Public Health Committee, they all perform their duties in a most efficient manner, and the Sanitary Sub-Officers have a thorough knowledge of their districts.

CUTHBERT J. CLIBBORN,

Medical Inspector.

March, 1901.

## COUNTY BOROUGH OF BELFAST.

RETURN showing streets in the different Dispensary Districts which require special attention :—

No. 1 District.—Mullan's-place, Patrick's-lane, and Caroline-court.

No. 2 District.—Union-place (25 to 31), Magee's-lane (1 and 3), Drake's-lane (7 to 11), Alexander-street (55 to 59).

No. 3 District.—Jordan-street, Druse-street, Campbell-street, and parts of Benwell, Belgrave, Longford, and Joseph-streets.

No. 4 District.—Davidson's-court, and parts of Bentham, Servia, Cyprus, and Mary-streets.

No. 5 District.—Mawhinney's-court, Mitchell-street (one side of), and Melboirne-street (part of).

No. 6 District.—Kennedy's-entry, Gas-court, James'-pass, Wilson's-court, Charlotte-street (left side of), King-street-place, and College-court.

No. 7 District.—Greencastle.

No. 8 District.—Ligoniel (old property).

No. 9 District.—Elliott's-row (front and back), Lower Wilton-street, Panpark-street, and Cupar-street (part of).

No. 10 District.—Glenpark-street, Saunderson and Antigna-streets.

No. 11 District.—Claremont-lane (even Nos.), Malcolm-lane (odd Nos.), Malcolm-street (even Nos.), Dun's-row, Avoniel-street, Tamery-street, Belmont-street, Bryansford-street (odd Nos.), Donegoro-street, small white houses, Mountpottanger road; Anderson-street (1 to 29), Moira-street (44 to 60), Hornidge-street, Clyde-street (2 to 30), Baltic-street, and Baltic-street East; Quinn-street, Wallace's-row, Somerset-street, Parkmore-street, and Moore-street.

No. 12 District.—Keenan-street (2 to 8), and Young's-row (3 and 5).

No. 13 District.—Joseph-street and Hill's-avenue; also open river in Lower Sydenham at B. & C. D. Railway.

## CORK.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE COUNTY BOROUGH.

BY DR. J. COOPER STAWELL.

**Topo-  
graphy.** The City of Cork is situated on the River Lee, fifteen miles from the mouth of the river. Its area is 2,266 acres, the greatest length E. by W. being about  $3\frac{1}{2}$  miles, greatest breadth N. by S. about 2 miles. The population in 1891 Census was 75,345,\* being divided as follows:—

North Side,	.	.	37,720
Central Portion,	.	.	16,212
South Side,	.	.	21,413

The City is divided into these three portions by the River Lee, which divides above it, and again unites below.

**Death  
rate.** During the year 1900 the birth-rate was 25.8, the death-rate from all causes 24.2, and the death-rate from the principal Zymotic diseases 1.4 per 1,000 of the population.

**Geological  
formation.** The top of the hill on the North side is of limestone, beneath it comes limestone shale, and then old red sandstone; on the South side is limestone shale and old red sandstone; while the Central portion is almost entirely artificial, and consists of six feet of filled-in material, ten feet of slob below that, and then gravel overlying old red sandstone.

The nett annual value on which the City rates are struck is £166,985 8s.

Income from Corporate property per annum, £4,298 4s. 6½d.

Indebtedness, £262,082 11s. 10d.

Rates of all kinds levied by Corporation, 9s 6½d. in £.

**Trade of  
port.** The number and tonnage of vessels inwards and outwards at the Port of Cork for the year 1889 are as follows:—

		Number.	Tonnage.
Foreign,	Inwards,	166	144,534
	Outwards,	41	29,601
Coastwise,	Inwards,	1,839	493,536
	Outwards,	1,845	579,564

**Foreign  
trade.** The principal foreign trade is with the following countries, the name of the most usual imports being written opposite to each:—

Country.	Imports.
United States,	Corn.
Holland,	General Cargo, Spirits.
Canada,	Timber.
Norway,	Timber.
Germany,	General Cargo, Spirits.
Russia (South),	Corn.
Do. (North),	Timber.
France,	Straw, Gypsum

\* Population according to the Census of 1901 is 75,973.

By the term "general cargo" is to be understood every article in ordinary use in human life. It does not comprise anything deleterious.

The principal coasting trade is done by the Cork Steam Packet Company and the Clyde Steamship Company, the former trading with Milford, Cardiff, Newport, Liverpool, London, Bristol, Plymouth, Southampton; the latter with Glasgow, Belfast, Dublin, Schull, Bantry, Castletown-berehaven, Sneem, Dingle, Valencia Island, Caherciveen. Both these Companies' boats carry general cargo, and some rags, the Clyde Steamship Company carrying also some shoddy, and occasionally fish in the season. The Cork Steampacket Company carries neither shoddy nor fish.

The principal manufactures in Cork are stout, porter, whiskey, tobacco, manure, vitriol, shirts, flax, boots and shoes, leather. Manufactures.

In the larger establishments the conditions of labour are satisfactory, and due attention seems to be paid to sanitation, ventilation, prevention of overcrowding, &c. Even in the smaller and private concerns I did not come across any glaring defects, although in some of them the sanitary arrangements were not satisfactory. The manure manufacture carried on by the Messrs. Goulding would naturally be first suspected of insalutary conditions, but it appears to be excellently conducted.

The blood from the slaughter-houses is brought here daily in large barrels on wheels and poured into large troughs, where it is treated with sulphuric acid, then shovelled on to kilns where it is dried, and after various processes, chemical and otherwise, it is turned out as a compound almost odourless, and certainly free from any unpleasant smell. Bones are also used in making this manure, but they are clean and quite dry, and free from smell.

This firm manufactures vitriol on the premises, and the process appears to be carried on with all possible precautions as to the health of the employees and the public.

In the tobacco factories female labour is almost exclusively employed, and there is nothing to complain about. Tobacco factories.

Shirt factories and large clothing establishments also largely employ female labour, and the arrangements for sanitation, ventilation, &c., are, on the whole, very satisfactory. Shirt factories, &c.

There seems to be little work done in their dwellings by tailors, seamstresses, &c., and I could not find anything corresponding to sweating dens. Sweating dens.

Child labour seems to be almost unknown.

Tanneries are free from smell and unpleasantness, but, of course, the discharges from them materially increase the pollution of the river into which they discharge. Child labour.  
Tanneries.

The majority of these establishments have suitable sanitary arrangements for their employees, but in at least two the arrangements are extremely defective. They should all be regularly visited and reported on by the Sanitary Sub-Officers. Breweries, &c.

[TABLE.]

## SANITARY STAFF.

The Public Health Officers charged with the sanitary administration of the city are as follows, the salary of each Officer being opposite his name :—

Office.	Name.	Salary. Per Annum.
		£ s. d.
Treasurer, . . . . .	John Cahill, . . . . .	200 0 0
Clerk to Council, . . . . .	Alexander McCarthy, . . . . .	600 0 0
Executive Sanitary Officer, . . . . .	Harry C. Galvin, . . . . .	180 0 0
Medical Superintendent Officer of Health, . . . . .	Denis D. Donovan, . . . . .	200 0 0
Medical Officer of Health, . . . . .	Denis D. Donovan, . . . . .	20 0 0
Do., . . . . .	D. J. O'Mahony, . . . . .	20 0 0
Do., . . . . .	P. J. O'Brien, . . . . .	20 0 0
Do., . . . . .	Patrick J. Daly, . . . . .	20 0 0
Do., . . . . .	Denis J. Flynn, . . . . .	20 0 0
Do., . . . . .	Thomas O'Callaghan, . . . . .	20 0 0
Do., . . . . .	Patrick J. Hayes, . . . . .	20 0 0
Sanitary Sub-Officer, . . . . .	Michael Saunders, . . . . .	104 0 0
Do., . . . . .	Michael O'Keefe, . . . . .	72 10 0
Do., . . . . .	William Martin, . . . . .	65 0 0
Do., . . . . .	John Sullivan, . . . . .	65 0 0
Do., . . . . .	Timothy Connolly, . . . . .	65 0 0
Do., . . . . .	James Murphy, . . . . .	65 0 0
Do., . . . . .	Michael F. Twomey, . . . . .	65 0 0
Do., . . . . .	James O'Connell, . . . . .	62 8 0
Do., . . . . .	William Neville, . . . . .	46 16 0
Do., . . . . .	John Murphy, Senior, . . . . .	46 16 0
Do., . . . . .	John Murphy, . . . . .	46 16 0
Do., . . . . .	James Dillon, . . . . .	46 16 0
Do., . . . . .	Edward Harrington, . . . . .	46 16 0
Do., . . . . .	Daniel Desmond, . . . . .	41 12 0

Four members of the Royal Irish Constabulary act as Inspectors under the Food and Drugs Acts, and submit specimens to City Analyst regularly.

## RETURN OF SANITARY OPERATIONS FOR 1899.

No. of inspections of houses, yards, and premises . . . . .	60,964
" inspections of lodging-houses (including nightly) . . . . .	763
" inspections of slaughter-houses . . . . .	9,765
" dwellings repaired . . . . .	520
" " cleansed . . . . .	1,362
" " closed (unfit for habitation) . . . . .	12
" water-closets (constructed) . . . . .	960
" dwellings closed (notices not complied with) . . . . .	8
" rooms closed (unfit for habitation) . . . . .	nil
" water-taps supplied to dwelling-houses . . . . .	nil
" water-taps supplied to slaughter-houses . . . . .	all filled
" samples of food analysed . . . . .	470
" dwellings cleansed and inspected . . . . .	717
" articles of clothing disinfected . . . . .	2,738



No. of bathers at Western-road baths . . . . .	23,121
" bathers at Marina . . . . .	15,160
" notices served to abate nuisances . . . . .	2,499
" prosecutions to enforce orders . . . . .	581
" meetings of Public Health Committee . . . . .	52
" reports to Public Health Committee by Medical Officers of Health . . . . .	1,132
" lbs. of unsound food destroyed . . . . .	116

Infectious Disease (Notification) Act, 1889, adopted 1890.  
 Public Health Acts (Amendment) Act, 1890, adopted 1891.  
 Infectious Disease (Prevention) Act, 1890, adopted 1891.

Legal enactments adopted, &c.

Housing of Working Classes—Action taken as follows:—

		£
Madden's Building, 47 Houses, Cost,		6,500
Horgan's " 126 " " "		10,000
Ryan's " 17 " " "		1,269
Roche's " 128 " " "		9,932
Harper's-lane " 11 " " "		6,000

In addition to the above large expenditure, the Corporation are also building large public baths at the back of the Municipal Buildings, the estimated cost of which is £8,100, a new morgue which will cost £360, and providing a new disinfecting chamber with Washington Lyon Disinfecter. " Infected garments, &c., are collected by one van, and, having been disinfected, are re-distributed to their owners by another van."

No regulations have been adopted under the Contagious Diseases (Animals) Act, 1886, nor under the Dairies, Cowsheds, and Milkshops Orders.

#### LIST of PUBLIC and PRIVATE SCHOOLS in the COUNTY BOROUGH of CORK.

Name of School.	No. of Rooms.	Pupils.	Sanitary Water Closet.	Accommodation Urinal.
Greencrest Hospital National School (St. Anne, Skinshead), . . . . .	2	73	Yes	Yes
St. Mary's National School (Eason's Hill), . . . . .	3	135	4	"
Whelan's-lane, No. 6, . . . . .	2	10	Yes	No
Convent (Female) National School (Gerald Griffin-street), . . . . .	12	779	30	Yes
Blackpool National School, . . . . .	7	345	6	"
North Monastery Schools (Peacock-lane), . . . . .	12	536	14	"
The Rock Schools (Blarney-street), . . . . .	3	125	4	"
The Christian Schools (Blarney-street), . . . . .	5	450	4	"
Strawberry Hill National School, . . . . .	2	90	2	"
Convent Schools (Peacock-lane), . . . . .	5	371	20	"
Sunday's Well-avenue School, . . . . .	1	30	1	"
Shankill-road National School, . . . . .	3	110	2	"
Tomkith-lane National School, . . . . .	2	80	2	"
Leinsterian National School, . . . . .	5	345	10	"
Presentation Brothers College (Western-road), . . . . .	5	265	6	"
St. Francis School, . . . . .	4	144	8	"
Christchurch-lane National School, . . . . .	4	124	8	"

LIST of PUBLIC and PRIVATE SCHOOLS in the COUNTY BOROUGH  
of CORK—continued.

Name of School.	No. of Rooms.	Pupils.	Sanitary Water Closet.	Accommodation Usual.
St. Peter and Paul's National School,	6	448	21	Yes
Dyke Norada, No. 17, . . . .	1	18	Yes	"
St. George's-street, No. 5, . . .	2	25	"	"
Queen-street National School, .	1	51	2	"
Queen-street, No. 12, . . . .	2	67	2	"
South Mall, No. 14, . . . .	2	45	Yes	"
South Mall, No. 54, . . . .	1	12	"	"
South Mall, No. 24, . . . .	1	14	"	"
School of Art, . . . .	5	98	7	Yes
Buckingham House, . . . .	2	20	4	"
Free School, White-street, . . .	"	"	"	"
Training Home, Union-quay, . .	3	51	6	Yes
Summer-hill, No. 10, . . . .	1	12	1	"
South Monastery National School, .	6	422	12	Yes
Convent Schools, Douglas-street, .	16	945	28	"
Cove-street National School, . .	5	121	6	"
Christian Schools (Sullivan's-quay), .	3	226	4	"
Dryne-street National School, . .	1	70	3	"
St. Mary's of the Isles Schools, . .	15	754	13	"
Greenmount Industrial Schools, . .	2	85	Yes	"
Greenmount National Schools, . .	6	325	5	"
South Terrace, No. 24, . . . .	1	80	Yes	"
South Terrace, No. 29, . . . .	3	36	"	"
South Terrace, No. 10, . . . .	1	69	"	"
South Terrace, No. 31, . . . .	1	30	2	"
Cork Model Schools, . . . .	12	420	Yes	Yes
St. Luke's National School, . . .	2	85	"	"
St. Luke's (Female) National School, .	2	80	"	"
St. Patrick's (Male) National School, .	2	142	Yes	Yes
St. Patrick's (Female) National School, .	3	120	"	"
St. Patrick's (Infant) National School, .	3	294	"	"
Cork Grammar School, . . . .	5	88	"	"
Carmichael (Female) National School, .	3	130	"	"
Carmichael (Male) National School, .	3	78	"	"
Adelaide Terrace, No. 1, . . . .	"	"	"	"
St. Luke's-place, No. 4, . . . .	3	36	"	"
Angel Guardian, Mayfield, . . .	2	76	"	"
St. Angela's, Patrick's-hill, . . .	4	120	"	"
Christian College, Wellington-road, .	8	265	"	"

All the above are regularly inspected by the Sanitary Sub-officers.

Slaughter  
houses, &c. There are 47 licensed slaughter-houses, 2 unlicensed, and 10 "gut and tripe houses." They are all under supervision, each Sanitary Sub-Officer being responsible for the condition of the houses in his district.

I understand that the intention is to give, in the near future, to one man, the inspection of the whole of these premises, and of the common lodging-houses.

I inspected numbers of these slaughter-houses during a day when animals were being killed, and, therefore, saw them at their worst. One or two of them are excellent, more especially that of Messrs.

Dillon, Cattle Market, which is provided with very modern appliances and the slaughtering is accomplished with a minimum of dirt. In some of the large bacon-curing establishments the premises are very cleanly, and great attention appears to be paid to cleanliness in detail, and to the use of modern machinery and appliances. With the exceptions referred to, there is little to be said in favour of the slaughter-houses of Cork, and the absolute necessity for an abattoir is very evident. The present slaughter-houses are too numerous, and are situated principally in back parts of the city in crowded localities. They are, moreover, small, ill-drained, ill-ventilated, and with very small provision made for the removal through the streets of offal, blood, &c. As a rule, these latter are put into tubs, which are covered, and put into carts and removed to the premises of tripe and gut merchants, manure manufacturers, &c., who buy them. The offal, blood, &c., is removed every two, three, or four days, according as they accumulate in sufficient quantity, but the blood especially is very often—almost always in fact—removed in large wooden barrels which must of necessity become very foul after a time. The owners assure me they “hose” them regularly, but it would not be possible to prevent the wood becoming offensive. These vessels should all, I consider, be of iron. As long as these small scattered slaughter-houses exist, not only will the careful supervision of them be difficult, but it will be always possible for an evil-minded person to slaughter unhealthy animals, or even to cut up and prepare for market the carcases of animals which have already died before they reach the butcher, at hours when they know they are pretty safe from inspection. These evils would be remedied by the provision of an abattoir where the slaughtering for the whole City could be done at regular hours and under proper supervision.

Infinitely worse than any of the slaughter-houses, however, are the Tripe and  
gut-houses. so-called “tripe and gut-houses,” of which there are about ten. In these dens the intestines of slaughtered animals are “cleaned” and filled with a mixture of blood, milk, and herbs, and sold at a comparatively high price. The intestines, when filled, are semi-cooked in open boilers, and the steamy stench and general surroundings of these places are most sickening.

These houses are situated in very thickly inhabited parts of the city, with practically no ventilation—two typical examples being in Kearney’s-lane, and Tinker’s-alley (off Trim-bast-street) respectively, the latter being quite close to a school.

A very important step has been taken in giving to the Medical Superintendent Officer of Health the absolute power of sanctioning or refusing the issue of new licences for slaughter-houses, and he is most careful in exercising that authority, very rarely approving of a new licence, and only then on condition that the premises for which it is issued be equipped in accordance with his requirements.

In connection with the subject of slaughter-houses, that of the meat Meat  
markets. markets come as a natural sequence. They are two in number, and are under the supervision of the Sanitary Authority, but a great blot in the management is the want of *skilled* supervision. Without an abattoir it is not possible that proper precautions can be taken as to the health of the animals slaughtered, and unless the meat exposed for sale is inspected by someone possessed of special knowledge of the subject, it is inevitable that more or less of it, which is unfit for human use, will escape detection. A particular source of danger in Cork in this connection is what is known as the “Poor Man’s Market,” in which meat of an inferior quality is sold at a low price. Seizures are

made here from time to time, but the salted meat presents special difficulties, as it is very often concealed, and only produced at the actual moment of sale. A Veterinary Inspector of the cattle, &c., to be slaughtered, and a person with intimate knowledge of the meat trade to inspect the markets, are specially needed, and they should be instructed to make most vigorous inspection of the meat presented for sale. The amount of meat condemned last year is, proportionately, extremely small (116 lbs.), and shows that the inspection has been of a perfunctory character.

Frozen  
Meat.  
Milk and  
Dairies.

Hardly any frozen meat is imported.

The above remarks apply with equal force to the milk supply and to the dairies. The milk, as a rule, is brought in from the country, and comparatively few dairy-cattle are housed in the City, but there is no inspection of the cattle as to their general health, existence of tuberculosis, &c., and there is no regular or systematic examination of the milk supplied, except by the Sanitary Sub-Officer, who notes in his diary the date and particulars of each inspection, and reports to the Medical Officer of Health. But here again the want of technical knowledge of the subject on the part of these officials largely neutralises the value of their inspections. In cases where an outbreak of infectious disease occurs, the sale of milk in the shops in the neighbourhood is prohibited.

Cow-sheds.

Some of the sheds provided for dairy cattle in the comparatively few cases in which they are kept in the City are too small for the numbers which occupy them, and some are very filthy. There is no provision in any dairy for the supply of sterilized milk, but some milk purveyors supply it.

Butter.

There is a large Butter Market, which belongs to a company, and the supervision appears to be strict. There are a number of inspectors who taste and examine each cask or lot. If a cask is suspected all its contents are turned out, weighed and examined, and if there is an undue per-centage of water, or if the butter is considered unfit for ordinary dietetic purposes, it is condemned, and is then generally purchased at a reduced rate for pastry, &c.

All butters are carefully classed, and each vessel branded according to its class, and also with numbers and letters which will show date of inspection and name of Inspector in case of any complaint arising.

Margarine.

The sale of this article is under the supervision of the Police, some members of whom are regularly told off for the purposes of food inspection, but the result is not satisfactory.

Bake-  
houses.

There is a very large number of bake-houses; some of the large ones, such as that of Messrs. Thompson, are models of what they should be, but in a great proportion of cases their condition leaves much to be desired.

Those in which a small number of hands, say two or three only are employed, are almost always dirty and unsuitable, being generally situated in crowded back streets, the building being apparently additions to the original shop premises, with low lean-to roofs, which are seldom or ever swept or cleaned, and often not weather-proof. The walls are dirty and uncared for, mixing-boards dirty, supply of water often kept in dirty vessels, and the sanitary arrangements very defective. Indeed in some cases the w.c. actually is a part of the bake-house itself; in most of them the ventilation is very bad.

Fish.

Fish is sold in the meat markets, and a considerable trade is done in dried fish, which is imported from Norway, Iceland, Newfoundland, &c. The supply of both fresh and dried fish is large, and the quality good

Any which becomes unfit for use as food, is sold for manure, and the whole supply is under the supervision of the Sanitary Sub-Officers.

The common lodging-houses are all registered, and regularly inspected both by day and night, care being taken that the bedding, &c., is turned down and the rooms duly aired. Most of the houses are very old, and some are very dirty, more especially in the Fair-lane district, where the water-closets (which are provided in almost all cases) are very filthy. It is pretty evident that in spite of all precautions to the contrary, these rooms are often occupied by a larger number of persons than they are scheduled for, the beds in many instances affording accommodation for a greater number than the available air space would permit of. The general charge for a bed in these houses is 3d. per night.

Common  
lodging-  
houses.

Tenement houses are in a worse condition by far than the common lodging-houses, roofs, floors, ceilings, windows, being in most cases greatly out of repair. Overcrowding also largely exists. The portions of the city where houses are chiefly let in tenements, such as Broad-lane, Albert-row, Fitzgerald-alley, Fair-lane district, are greatly congested, in many cases one lane being at the back of another—e.g., Hughes'-lane, at the back of which is another lane which is only about nine feet wide. The Fair-lane district has been for years condemned, and here and in many other places the Corporation are pulling down the houses where possible, and, indeed, this seems to be the only remedy in most cases. This course of procedure can only be carried out very gradually, according as accommodation can be provided for the inmates elsewhere. Water-closets (common to the tenants, who are supplied with keys) are provided in most of these parts, but there is no arrangement, generally speaking, for the disposal of rain-water, which runs straight on to the ground, the houses not being fitted with pipes or shoots. These back lanes are generally paved with cobbles, and there is very often an open drain in the centre for the surface water. Of course this class of paving makes it much more difficult to clean the back lanes, and if they were, for example, concreted, then they could be hosed. For a room unfurnished in these parts the average rent is 1s. 6d. per week.

Tenement  
houses.

For the regulation and management of both common lodging-houses and tenements full provision is made in the bye-laws, but it would be utterly impossible to make a large proportion of the latter fit for human habitation. In the case of the tenement houses, moreover, the regulations do not seem to be enforced with anything approaching the stringency applied towards the common lodging-houses.

Bye-laws.

There are no cellar dwellings.

Cellar  
dwellings

The Corporation have erected 318 artisans' dwellings at a cost of £27,701, and are now building 11 more in what was a very congested district, near Harper's-lane, the cost of which will be about £6,000. The weekly rent of those completed varies from 1s. 6d. to 3s. 6d., and the annual income derivable from them is about £1,930. They are substantially built, airy cottages, and very suitable for their purpose.

Artisans'  
dwellings.

Domestic scavenging is carried out by the staff of the Sanitary Authority, who go round regularly and remove all collections in covered iron carts to the manure depôts, or, where the refuse is not of any value, it is taken to a field at Marina, which is used as a "dumping" ground. Large covered wooden troughs, in which the inhabitants place the refuse, &c., have been in use through the city for years, but they are objectionable in every way, and the Sanitary Authority are now providing neat iron bins, placed in receptacles built for them in the walls. Cleaning the streets, especially in wet weather, is most inefficiently

Scaveng-  
ing, dis-  
posal of  
manure,  
surface  
refuse, &c.

carried out, the mud being often gathered into heaps and left unre-moved for days together.

#### Manure.

The bye-laws of the municipality forbid manure being carried through the streets between 8 a.m. and 8 p.m. It is stored in large heaps in depôts, one at Pouladuv, for the south side of the city, and another at Old Mallow Road for the north. Every Saturday it is sold by public auction, and if the purchaser of any lot does not remove it in a week it again becomes the property of the Sanitary Authority, and is re-sold.

It is always bought by farmers and gardeners, finds a ready sale, and realizes a large amount annually. The manure depôts are, of course, offensive when one is close to them, but they are well removed from inhabited dwellings, and outside the County Borough.

#### Cess-pools

In parts of the City, such as Sunday's Well and Montenotte, some of the houses are below the level of the sewers, and cannot be connected with them. Cess-pools are provided in these cases, but they are very old, built of rubble, and are insanitary. Very stringent rules are laid down as to the construction, ventilation, cleansing, &c., of new cess-pools. They must be built of good brickwork or masonry in cement, with a backing of at least nine inches of well-puddled clay, arched or otherwise properly covered over, and provided with adequate means of ventilation. They are not to be within forty feet of any dwelling or public building, or any building in which trade, &c., is, or may be at any future time, carried on, and they must be at least fifty feet away from any water used for drinking or domestic purposes, or for manufacturing drinks for human consumption. They must also be provided with ready means of access for cleansing and for removal of their contents, and, where practicable, they must be in such a position that their contents can be removed without being carried through any dwellings or business premises. In isolated cases, however, such as the south side of Blarney-street, there is no sanitary provision or cess-pool, and the excrement is simply thrown on to lower ground or left on the surface of the yards at the back of the houses. Off York-street, in the district of Foster's-lane, Slattery's-lane, &c., a few houses are provided with pail privies, because, in the opinion of the Medical Superintendent Officer of Health, the discharge from water-closets would be too large to be carried off by the stream into which they should discharge at Black-pool Bridge.

Cess-pools are cleaned by the owners of the premises at night time, when the Sanitary Authority consider it necessary, and their contents deposited at Marina, although there is an Order of the Corporation against this practice, which is most objectionable and dangerous.

#### Fowl, &c., in dwellings. Water closets.

The keeping of fowl and other animals in dwelling-houses is prohibited.

A very large number of water-closets has been, by the influence of the Sanitary Authority, erected through the city; last year alone, over 800, I understand. They are all provided with a good water supply, and well built as a rule. In most cases they are kept fairly clean, and are regularly inspected by the Sanitary Sub-Officers. In spite of all care, however, they get, in the poorer and more crowded parts of the City, into a dilapidated and filthy condition in some instances.

#### Public urinals.

Public urinals are provided in some parts of the City, and are regularly inspected and cleaned. They are often, however, very offensive. Many more are needed, and also public water-closets, and the necessity for them has been for years past urged on the Sanitary Authority by the Medical Superintendent Officer of Health.

# DESCRIPTION OF PUBLIC BATHS AT PRESENT IN COURSE OF ERECTION.

The building is to contain two tanks, each 75 feet by 30 feet, with water varying in depth from 3 feet 6 inches to 5 feet 6 inches.

The contents of each bath will be 68,000 gallons, and the cost of filling at 4d. per 1,000 would be 5s. 8d. for the two.

The following additions were made to the original scheme :—

A wash-house for washing and drying towels, 18 Douche baths, boiler house and chimney, 60 feet high, 22 feet by 5 inches, 6 Cornish boilers for generating steam, steam heater and calorifier, and steam pipes for heating buildings and water, and machinery for washing and drying towels.

To erect the building and machinery above enumerated will cost £2,000.

The total estimated cost of the baths is £8,100.

Cattle, pigs, sheep, and calves are kept in lairs prior to shipment for periods not longer than a night or two as a rule. The principal of these lairs are the one belonging to the Cork Steampacket Company, and the one at Evergreen belonging to a private individual. In both of these adequate provision is made for the comfortable housing of the animals, and for feeding and supplying them with abundant clean drinking water. The pens are provided with proper flooring, are well drained, flushed with water and lime-washed at regular intervals, while all the manure is promptly removed to farms in the country.

All cattle, &c., at the Cork Steampacket Company's yard are inspected by a veterinary surgeon before shipment.

## GENERAL CONDITION OF SANITARY DISTRICTS.

### No. 1.—Population 1891, 11,927.

The sanitary condition of this district is good on the whole. Many of the old dilapidated houses have been pulled down, and new and good houses are plentiful. There is a small pauper population as the district is practically suburban, and in examining the death-rate for 1899 (23·2 per 1,000 from all causes), it must be borne in mind that the following Public Institutions are situated in it :—

Two Hospitals for Incurables, the Asylum of the Little Sisters of the Poor for Aged and Infirm, and the Cork Military Barracks. Into the three last-named large numbers of people are received from different parts of the city as well as from outlying localities. The percentage of deaths from the principal zymotic diseases (1·6) is the lowest in the city, and the number of deaths of people of sixty years and upwards (98) is the highest.

No. 2.—(Blackpool District).—Population in 1891, 9,252. A large portion is very filthy and overcrowded, and contains numerous narrow lanes, filthy and ill-ventilated slaughter-houses, and foul, evil-smelling tripe and gut shops.

The population is largely a dispensary one. The district comprises several of the condemned areas, and the death rate is the highest in the city (30·3). That from the principal zymotic diseases (3·2), ranking amongst the three highest in the returns. The sewerage of the entire district is faulty, and its general character cannot be materially improved until the condemned areas are cleared away. The North Fever Hospital is situate in this district, and probably increases the zymotic disease death-rate.

No. 3  
Dispen-  
sary  
District.

The present No. 3 District is made up of the old Nos. 3 and 4, which have been joined.

The combined population in 1891 was 9,816. That portion of it which was the original No. 3, and which includes an area extending from Fair-lane and Fair-hill out to Killeena, in the country, and on to the Blarney-road, is about the worst part of the city. Slaughter-houses, gut-yards, and vile smells abound, and the very worst houses within the municipal boundary are to be found in it, being part of the condemned areas. The remarks on this latter head made regarding No. 2 are doubly applicable here. Its death-rate in 1899 was very high (25.5), and its zymotic death-rate (3.6), the highest in the city.

The portion of this district, which was formerly No. 4, is of a much better class, and contains a comparatively small population of poor people. It is well situated, and is almost analogous to No. 1 District.

Its total death-rate in 1899 was 22.0, and the death-rate from the principal zymotic diseases, 2.0; but it must be remembered that this district contains the District Lunatic Asylum, and also the Good Shepherd's Convent, both of which Institutions receive inmates from other districts of the city and country, and the death-rate of both of them is included.

No. 4  
Dispen-  
sary  
District.

Population in 1891, 10,356.

This is the most congested portion of the city, and is greatly overcrowded. A number of filthy lanes exist, while the tenement houses are numerous and densely populated.

The death-rate from all causes is high (25.6) and the death-rate from zymotic disease 2.6. These rates, however, include that of the North Infirmary, which is situated in the district.

No. 5  
Dispen-  
sary  
District.

This now consists of half the old No. 6 District, commonly known as the flat of the city. The population of the entire, in 1891, was 12,469, and the death-rate in that year was 24.3 from all causes, that from the principal zymotic diseases being 2.8. It contains the Mercy Hospital and the Lying-in Hospital. There is much filth and overcrowding in the district, and the sub-soil is damp, foul, and saturated with filth, the old rubble sewers which traverse this district being tide-locked for twelve hours out of every twenty-four. Sometimes, with an easterly wind and spring tide, floods are caused, which have a very injurious effect on the public health.

No. 6  
Dispen-  
sary  
District.

The remaining half of old No. 6 District, extending westward from a line drawn through Wanderford-street, Courthouse street, and Grattan-street to the borough boundary, joined to urban portion of old No. 7, forms the present No. 6 District, and the population would be about 10,600 according to 1891 Census. The remarks made as to one half of old No. 6 apply largely to that part contained in this district, and the death-rate of No. 7 (old), 1899, is 27.8, that from zymotic disease being 3.3. A number of new houses have recently been built in this portion of the city, and some new areas opened up.

No. 7  
Dispen-  
sary  
District.

No. 7 District is now practically the old No. 8, with the rural portion, extending from Southern-road to Douglas Bridge, and thence to Pouladuv-road and south end of Green-street, cut off. The population of the old district in 1891 was 15,384; its death-rate in 1899, 24.8; and its death-rate from zymotic disease, 3.2. Clean and healthy areas have been opened up in this district, not only by the Corporation, but by private enterprise; and with regard to the death-rate I should add that the deaths in the union hospitals were registered in this district in 1899.

The population given for each district is only approximate, as the areas have been recently altered. Above particulars as to the dispen-



sary districts are taken from the reports of Dr. Donovan, Medical Superintendent Officer of Health.

The following congested and insanitary areas in the various Dispensary districts need special attention at the hands of the sanitary staff:—

- No. 1. St. Mary's-avenue (Dillon's Cross).
- No. 2. Bailey's-lane, Buchanan's-lane, Wolf Tone-street, Peacock-lane.
- No. 3. Burnt-lane No. 1, Burnt-lane No. 2, Mannix-lane, and Kerry-lane.
- No. 4. Coppinger's-lane, Harpur's-lane, Curtis's-lane, and Albert-row.
- No. 5. Broad-lane, Daly's-row, Coleman's-lane, Phillip's-lane, Bellard's-lane.
- No. 6. Croghtonmore-square.
- No. 7. Evergreen-street, Abbey-street, Barry's-alley, Vicar-street alley.

Of course this list does not include all the insanitary portions of the city, but it gives fair specimens of the worst places in each district.

Above and to the west of the City of Cork the River Lee divides Sewerage into two branches, known afterwards as the North and South Channels, which separate the city into three portions—the Northern, the Central, and the Southern.

At Jail-road a branch comes off from the southern channel, goes under the western road, across the Dyke Fields by the side of Mardyke-walk, on its northern side, and under Nile-street, where it is covered for the first time, and is about eighteen feet wide. It next runs under Liberty-street and South Main-street, at the back of the houses at the south side of Castle-street (under their back-yards), under the middle of the entire length of Patrick-street, and joins the river at Merchant's-quay, near Patrick's Bridge.

Near the establishment of Messrs. Woodford and Burnes, in Patrick-street, this stream gives off a branch which runs under the Grand-parade as far as Tackey-street, the drainage of which it receives from piped sewers. A branch also goes under Corn Market-street and discharges into the river at Kyrle's-quay; and at Nile-street a branch, eight feet wide, goes under Duncan-street, discharging into the north channel at Bachelor's-quay. From Jail-road pipes are laid along Western-road and Great George's-street, as far as South Main-street, where they connect with a rubble sewer which is carried down Main-street (South), and discharges under South Gate Bridge into the south channel. Through George's-street, and from Prince's-street, a rubble sewer turns down the Grand-parade and discharges into the river, while on the eastern side of the Grand-parade (from George's-street) a rubble sewer drains Kitt's-lane and Old Post Office-lane. Down the South Mall from Prince's-street to Beasley-street a rubble sewer runs at each side. Opposite Prince's-street they join and discharge into the south channel above Parliament Bridge. Near Beasley-street they have a connection and discharge into the river below Parnell Bridge, continuing, after this connection, as one along the remainder of the South Mall under Warren's-place, and discharging into the north channel at Merchant's-quay. The portions of central part of the city not mentioned above are connected with the main sewer either by piped or rubble branches.

Is drained by piped sewers discharging into the south channel, with the exception of Bennett-street, parts of Keyes's-lane, Barrack-street, Southern portion of city.

Northern  
portion  
of city.

Sober-lane, Priory-lane, Dynan-street, White-street, and Copley-street, in which are rubble sewers.

From Philpot's-lane, down Shandon-street, a rubble sewer runs which connects with another rubble sewer running under Church-street. Into this sewer the streets in the immediate neighbourhood drain—either by piped or rubble connections—and it discharges into the north channel under North Gate Bridge.

A piped sewer starts from Bayley's-lane, goes along Clarence-street, as far as St. John's-square, and passing through O'Connell-street, is discharged into a main rubble sewer at Watercourse-road. This last sewer is really the stream from Blackpool Bridge, and runs under Watercourse-road, under Lady's Well Brewery, and joins the Kiln River (which is open in all its course except where it is built over by Murphy's Brewery), passes under John-street Bridge, Punch's Bridge, and Camden-quay Bridge, into the river, the drains to the east side of Clarence-street and Great Britain-street being connected with it.

The district lying to the east side of the Kiln River is chiefly drained by piped sewers, but all such sewers connect with rubble sewers in Devonshire-street, Coburg-street, Pine-street, and Hardwicke-street, which discharge into the north channel at Camden-quay. From Wellington-road, portion of Patrick's-hill, and Bridge-street, other rubble sewers draining into the north channel under Patrick-street are connected with piped sewers from Audley-hill and district.

Down King-street, as far as Harley-street, and through it a rubble sewer runs and discharges into the north channel at Harley-street. It connects with a rubble sewer which runs through Wellington-place and York-street, and into these two rubble sewers the piped sewers of this district discharge. Opposite the Carmichael Schools, in King-street, a rubble sewer commences, which runs down Ship-street, and joining another rubble sewer which runs down Summer-hill, starting from St. Luke's Cross, discharges into the north channel at Patrick's-quay. With this latter glazed pipes, running the whole length of Ballyhooly-road and Gardener's-hill, connect at St. Luke's Cross, and also pipes along Montenotte-road, as far as High Park Lodge. The lower part of Montenotte-road has drains for surface water only, running into a cesspool on Mr. Gibbing's land, which the Corporation proposed connecting with pipes at Beale's-hill by going under the railway, joining a piped sewer at Glanmire-road, and discharging into the river at Ward's-terrace.

The Glanmire district is piped from the western side of the railway tunnel, and connects with rubble sewers in Ship-street and Alfred-street.

Starting opposite Mahony's-lane on Glanmire-road a rubble sewer runs down Glanmire-road, through Water-street, and discharges into the river (now united) opposite Water-street. From Rock Grove-square pipes connect with this sewer at Water-street, and drain that portion of Glanmire road.

Drainage  
of mili-  
tary bar-  
racks.

A piped sewer starts on Old Youghal-road, opposite Fairy-lane, and divides at Military-road into two portions, one of which continues along the Youghal-road to the western boundary of the Barracks, passes through some fields, and joins the other branch, which has come down Military-road, opposite the old Methodist Church. The two united continue along Military-road and Wellington-road to St. Luke's Cross, down Mahony's-lane, under Glanmire-road, and under G. S. & W. Railway works, discharging into the north channel near the west end of what was formerly known as Hargreave's-quay. From the above it will be seen that the main sewers in the central part of the city are

simply various tributaries of the River Lee which have been covered over. These and all other sewers in the city are ventilated by surface openings, and it is not found that this arrangement gives rise to many complaints. There are few flushing tanks. In the northern portion a great many of the principal sewers are rubble built, but in the southern the sewers are principally piped. The entire question of the drainage of Cork is one which bristles with difficulties, and two reports have been already made on the subject—one by Mr. Coston, C.E., in 1879; and the other by Mr. M'Mullen, B.E., in 1888. In the central portion of the city especially, the soil, which was originally largely artificial, is polluted to an enormous extent by the sewage matter forced into it from the ill built sewers by tidal pressure. Pipes are in many cases carried from the end of the sewers right into the bed of the river, so as to ensure the discharge of the contents under water as far as possible. In spite of this precaution, however, the river is most offensive at low water. Altogether it is inconceivable that Cork could be healthy while the main drainage is in its present defective condition; and even if pumping were thoroughly and systematically carried out in the central portion, it would be many years before the soil would become even comparatively innocuous.

The water supply is taken from the River Lee at a point near Shanakill, above and to the west of the City. The Pumping Station is situated on Lee-road, Shanakill, and the pumping plant consists of four Steam Engines—one Horizontal, one Cornish, and two Steam—and three Turbines—total pumping capacity being 398,767 gallons per hour. Two additional turbines are at present in course of erection. The water is taken from the river alongside the Pumping Station through suction pipes to the different pumping plant and not filtered, and iron grating on the outside preventing any foreign matter getting into the pumps. A filtering tunnel, designed by Mr. George Wilson Stevenson, of London, about 23 years ago, was sunk alongside the river bank about 23 years since, but was never a success. The present City Engineer, Mr. Cutler, is making some alterations and additions to the tunnel, which he hopes will greatly improve it, and make it capable of supplying clear water for town purposes during the continuance of floods at the Pumping Station, as in flood time the water is much discoloured from peat. The filter tunnel consists of two rings of brick-work, the inner one 48 inches internal diameter, and the external one five feet six inches, extending along the river bank about 500 yards, three wells, or pumps, being sunk in the line of tunnel to augment the supply. The pure water basin is 45 feet in diameter and 14 feet deep, and communicates with suctions of pumps through a concrete conduit, 3 feet internal diameter. When Mr. Cutler's plans are carried out a complete change will be made in connections to pumping plant. The water is pumped into two Reservoirs—the Upper or High Level Reservoir having a capacity of 721,481 gallons, and supplies water to 17,760 persons; the Low Level Reservoir has a capacity of 3,403,836 gallons, and supplies water to 68,529 persons, making a sum total of 86,289 persons to whom water is supplied. There is a total of 80½ miles of water mains, of which the value may be estimated at £31,370. The consumption of water is about 45–50 gallons per head per day. (City Engineer's Report, 1898.)

The water is supplied direct to stand-pipes and scallery traps, and only to cisterns supplied with taps where hot-water supply is needed.

When houses are not supplied with taps the inhabitants get water from the public stand-pipes in the streets. The supply of water is constant, and the water is submitted to periodical analysis.

Part of the filter-scheme is now complete, and 3,500,000 gallons are being pumped from the filter-tunnel out of a total quantity of 4,600,000 gallons, now being daily consumed.

It is expected that within the next two months the whole city water supply will be filtered.

Hospital  
accommo-  
dation.

There are several large and excellently equipped Hospitals in Cork, and in some of them clinical instruction is given to the Students of the Queen's College. The following are the principal:—

Cork Union Infirmary,	No. of Beds,	1,260
Cork Union Infirmary,	No. of Fever Beds,	84
North Fever Hospital,	"	80
South Infirmary,	No. of Beds,	101
North Infirmary,	"	110
Hospital for Incurables (Protestant),	"	60
St. Vincent's	"	40
St. Vincent's (Women & Children),	"	40
Lying-in Hospital,	"	16
Eye, Ear, and Throat Hospital,	"	46
Mercy Hospital,	"	60
Women and Children's Hospital,	"	80

These Institutions treat a very large number of both intern and extern patients annually, and are dependent largely in some cases on voluntary contributions, while others have considerable endowments and grants.

#### RECOMMENDATIONS.

All through my inquiry into the sanitation of the City I was much struck by the evidence of earnest, vigorous, and sustained effort for improvement on the part of the Sanitary Authority. No doubt much remains to be done, but an enormous amount of sanitary reforms has been carried out, and in this respect Cork will bear very favourable comparison with cities of much greater pretensions.

1. There is one great blot in the sanitary administration, and that is in the arrangements as to the appointment of the Sanitary Sub-Officers. These officials have hitherto been appointed regardless of the necessity of their possessing some knowledge, however elementary, of the Laws of Public Health. They should certainly be submitted to some form of examination beforehand—in general education as well as in sanitation—or else instruction should be given to them after their nomination, and an examination held as to their general fitness after a course of instruction, and before their appointment is confirmed.

One of their number, at least, should be a registered plumber, whose care it would be to inspect all traps, closet fittings, &c., report defects, and explain the work necessary to be done. He would also be able to advise his brother-officers in matters of technique, of which the great majority of them would, very naturally, be found ignorant. These views are strongly shared with me by Dr. Donovan, Medical Superintendent Officer of Health, who has repeatedly urged them on the Sanitary Authority, but hitherto without success.

2. With regard to the closing up and gradual clearing away of insanitary houses, I cannot do better than refer to the report of Dr. Donovan, Medical Superintendent Officer of Health, in regard to this matter. He therein urges the Corporation to enforce the provisions of the Public Health (Ireland) Act, 1878, which defines as a nuisance (Section 107) "any premises in such a state as to be a nuisance and injurious to health," and points out that Magistrates have power under Section 113 of the same Act to prohibit the using of such houses until

they are made fit—in the judgment of the Court—for habitation. In this way large numbers of houses would be closed with comparatively little cost to the ratepayers, their condition in many cases being such as not to warrant any outlay on their repair. In this connection it would be well to bear in mind the additional powers conferred on sanitary authorities by Part II. of the Housing of the Working Classes Act to enable them to deal with such premises.

Of course it may be said this would be a hardship on the owners, but, as Dr. Donovan most pertinently remarks, "if a man has a quantity of diseased meat or diseased fish for sale he must submit to have it destroyed as unfit for human food; so, also, must those who own unhealthy dwellings submit to have them closed until they are made habitable."

3. It would be most desirable if owners of tenement houses were obliged to take out a licence annually for each house, and also appoint a responsible caretaker. Water should be laid on to each floor, and sanitary accommodation provided for, at least, every two families.

The condition of the streets leaves much to be desired. In wet weather the mud is, for the most part, left alone, but sometimes it is collected into heaps at the sides of the streets and left there for an indefinite period. A better system of scavenging and paving is desirable.

4. Dr. Donovan, in his Report of 1888, recommends the adoption of rules and regulations as to Cow-keepers, Dairy-men, Milk-shops, Dairies, &c., similar to those in force in Dublin at that time. It is most desirable, and, indeed, essential, that Bye-Laws should be adopted, and the Sanitary Authority would do well to put in force the Model Bye-Laws of the Local Government Board, a copy of which was forwarded to them with a Circular Letter of 26th July, 1899.

The Sanitary Authority should, if possible, require all dairies from which milk is supplied to the City to be registered, and should instruct their Sanitary Officials to inspect all milk conveyed in carts into the City from without the Municipal Boundary.

5. If the Corporation had power, and funds available, to purchase the unsuitable slaughter and gut-houses and erect a public Abattoir, it would be a great advantage. As things are at present, they are obliged to wait until one of these houses becomes a nuisance and then proceed in the ordinary way.

6. The expenditure on a main-drainage scheme would be very large, but even if it would not be carried out just now, a great improvement could be effected by dredging the river and carrying the pipes from the drains well out into the bed of the river, so that they would be covered even at lowest water, and also by cleaning the Blackpool River. This latter has hardly any water in it sometimes in the summer, and is most offensive to the residents, while in the winter its choked condition causes serious floods.

7. The Bake-houses should be regularly inspected, and the owners compelled to keep them in a sanitary condition. At present they are a source of danger to all concerned, workers as well as consumers.

I desire most gratefully to acknowledge the help I received in making this Report from everybody connected with the Corporation and Sanitary administration of Cork, and particularly from Dr. Donovan, Medical Superintendent Officer of Health; Mr. Cutler, City Engineer, and his Assistant, Mr. Hare; Mr. Barry Galvin, Executive Sanitary Officer, and his Assistant, Mr. O'Keefe; and Mr. Michael Saunders, principal Sanitary Sub-Officer.

J. COOPER STAWELL,  
Medical Inspector,

January, 1901.

## LIMERICK.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE COUNTY BOROUGH.

BY SIR ACHESON MACCULLAGH, M.D.

General  
description.

The County Borough of Limerick, which is situate at the inland extremity of the estuary of the River Shannon, covers an area of 2,074 acres, and has, according to the Census of 1891, a population of 37,155.\*

During the year 1900 the birth-rate was 27·2, the death-rate from all causes 24·3, and the death-rate from the principal zymotic diseases 0·4 per 1,000 of the population.

The number of inhabited houses is about 5,826, being an average of 6·3 to each house, and 17·9 to each acre.

The valuation of the City is £70,521 19s.; in 1896 the valuation was £68,346 10s., and the liabilities £114,395, which includes the sum of £22,000 for electric lighting, recommended by the Local Government Board, but not yet granted by the Board of Works.

The mean elevation of the City above the sea level is about 50 feet, the highest elevation being 87 feet, and the lowest 27 feet.

The soil is limestone.

## DWELLINGS.

General  
sanitary  
circum-  
stances.

The houses in the City proper are almost all old. There are, however, a good many residential houses in the neighbourhood, and along the Ennis road a number of semi-detached houses and terrace houses have been built lately. These houses are of modern construction, have domestic water supply and sanitary arrangements, but as there is no main sewer in this district they are drained into cesspools at the back.

There are some six or seven hundred tenement houses in the County Borough; these are almost all very old, more or less dilapidated and out of repair; in many instances they are overcrowded and very dirty, sanitary arrangements being more or less defective, those that are provided with water-closets having them generally in most unsuitable places, and not properly ventilated.

There are 3,274 houses, valued at £5 or under. These, which are occupied by the working-classes, are, for the most part, situated in back streets and narrow lanes, are faulty as regards air space, lighting and ventilation. Many of them are kept in a dirty state, the yards, in many instances, are either unpaved, or very defectively paved, without proper drainage. A very large number of these houses are without back premises altogether. Off John-street there are some narrow, ill-ventilated lanes, which are in a very dirty state, the houses in them being bad, and many of them unfit for human habitation. The Council own some houses in this district, which are in a very wretched condition.

The Sanitary Authority have built forty-four houses under the

\* Population according to the Census of 1901 is 38,083.

Housing of the Working Classes Act, and have under consideration the building of twenty-three more.

The Labourers' Dwellings Company have built twenty-one houses.

The water supply of the City is obtained from the River Shannon, the intake being about seven miles from the City. It is sent by tunnel to Newcastles Reservoir, from whence it is distributed by gravitation to the City. The water passes through filter beds at the intake before being sent to the Reservoir. The lands are all meadow. Newcastles Reservoir, some two miles from the City, is 17 feet deep, and has an area of 51,416 square feet, its capacity being 5,141,600 gallons, equal to about a four days' supply. The supply is a continuous one, and is about 40 gallons per head. The very great majority of houses have separate branch pipes from the mains.

Water supply.

There are about thirty-three miles of streets, roads, and lanes, in the district, a good many of which are without any sewerage. The sewerage system is one by gravitation, and consists of several main sewers, which all discharge into the river below high-water mark, the outlets in one or two instances being provided with flood gates. Most of the sewers are masonry built, but some of the newer ones are piped. The house connections are of earthenware pipes. They are not, as a rule, properly trapped or ventilated; in few instances are they laid in concrete. The old street gulleys are not trapped, all new ones being put in, however, are. There are some street ventilators, which are kept fairly clean and open.

Sewerage.

In a large number of the poorer localities there is no sewerage; an open drain, which in almost every instance is badly paved, conveys the house slops and surface water. As a general rule there is no drainage except this open drain, and no sanitary arrangements in any of the lanes or courts off the main streets.

There are no arrangements made for domestic scavenging, and none for the regular and systematic cleansing of privies and ashpits.

Refuse, dis, coal.

The scavenging staff consists of two superintendents, with sixty sweepers (on an average) and nineteen carts. This staff go out at six o'clock each morning, and are supposed to visit each street, lane, &c., for cleansing purposes, and to remove the refuse and night soil which is deposited on the streets in these localities where the houses have no back yards or sanitary accommodation. No receptacles are provided, everything being thrown on the roadway. This same staff is employed sweeping and cleaning the streets.

There are comparatively few privies through the district, houses as a rule being either provided with water closets, or else without any sanitary arrangements, and in the poorer localities a very large number are in this latter condition.

Many of the water-closets are erected in unsuitable positions, and often kept in a dirty state.

There are two manure depôts for the district, one at Thomond Gate and the other at Singland. The Thomond Gate depôt is not far from the public road, and is close to a number of occupied dwellings. Complaints have been made about this depôt. I consider the site objectionable. Though close to the road the Singland depôt is not near occupied dwellings, and is more in the country. There is only one inhabited house close to it.

Manure depôts.

The Corporation should take into consideration the question of procuring a Refuse Destructor.

There is only one dairy, which is also used as a provision and general shop, in the City. It is not a very suitable place. The better-class dairies, cowsheds, and milk-shops.

Dairies, cowsheds, and milk-shops.

houses are supplied directly with milk from the carts, but in the poorer localities there are close on a hundred houses where milk is sold; these are almost all small general shops, in which every variety of provisions, and in many cases coals and oil also, are sold, the open milk cans standing on the counter amongst the other goods.

The cow-sheds are chiefly in the district of Park, there being a few in the Thomond Gate district. I saw one also in Gerald Griffin-street, though I had been informed by the Inspector that there were none in the City proper. As a rule, these cow-sheds are close to the dwellings, their construction, lighting, ventilation, and drainage, being defective, with a general absence of cleanliness in their surroundings. Large quantities of manure are piled close to the sheds. This is specially noticeable at Park, where the manure heaps are so large that they encroach on the public road.

No dairies, cow-sheds, or milk-shops, are registered, though an Inspector of them has been appointed.

There is a milk market off Mungret street, where milk is brought morning and evening. This place is used as a fowl, hide, and fruit market; it is also used as an "old clothes market." It is not kept clean, the surface being littered with refuse of all sorts, and is most unsuitable as a place for the sale of milk.

Common  
lodging-  
houses.

Though there are a large number of common lodging houses in Limerick none of them are registered. Many of these houses are most unsuitable for the purpose, some being without any sanitary arrangements, and several kept in a very dirty state.

Slaughter-  
houses.

There is no public slaughter-house in Limerick; but as most of the hutchers kill on their own premises, there are a very large number of places used as slaughter-houses in the City. None of these are licensed, and are subject to no regulations. Most of them are much too close to inhabited dwellings, and while some are fairly well kept, the majority do not appear to be cleansed and lime washed frequently enough; the flooring of several is defective, and some are without drainage. I saw a water-closet in one slaughter-house.

#### SANITARY ADMINISTRATION.

The Limerick Corporation consists of forty members; the Public Health Committee, consisting of the whole Council, meet regularly fortnightly. The Sanitary Staff is as follows:—

J. J. Peacocke, Esq., Executive Sanitary Officer, who is also Borough Surveyor.

R. Barry, Esq., M.D., Medical Superintendent Officer of Health.

J. Muleahy, Esq., M.D., Medical Officer of Health, No. 1 District.

P. J. Graham, Esq., M.D., Medical Officer of Health, No. 2 District.

J. F. Shanahan, Esq., M.D., Medical Officer of Health, No. 3 District.

#### *Sanitary Sub-Officers.*

Mr. J. Mulqueen, No. 1 District.

Mr. D. Kennelly, No. 2 District.

Mr. D. Quinlan, No. 3 District.

Mr. J. Barry, Inspector of Dairies, Cowsheds, and Milkshops.

The Sanitary Sub-Officers devote their whole time to their duties and are each paid a salary of twenty-five shillings a week; they keep



diaries showing the work they perform, and report matters requiring attention to the respective Medical Officers of Health, but do not make reports to the Public Health Committee. They superintend the disinfection of infected houses, but do not remove cases of infectious disease to hospital. Mulqueen is too old and not physically able to perform the duties of his office; Kennelly and Quinlan are active and efficient officers.

Mr. Barry, the Inspector of Dairies, Cowsheds, and Milkshops, is paid a salary of thirty-seven pounds a year. He was directed in November, 1899, to report to each meeting of the Public Health Committee. He states he reports usually once a month, but the last report that appears to have been laid before the Committee is 7th March, 1900. He has made no effort to get the various cowsheds and milkshops registered, nor does he appear to make a regular and systematic inspection of them.

Cases of infectious disease occurring in the City are sent either to St. John's Hospital or to the Union Fever Hospital. The Sanitary Authority do not possess an Ambulance Van, but use the Workhouse one; they also make use of the Disinfecting apparatus at the Workhouse, for which they pay £10 a year.

The Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890, have both been adopted by the Sanitary Authority, and are about to be put in force.

No Bye-laws have yet been passed, but a set of draft Bye-laws dealing with various subjects is under consideration.

The streets of Limerick are kept in a very dirty condition; the scavenging staff appears quite unable to cope with the work.

The dirty and insanitary condition of the smaller streets, lanes, and passages is most noticeable, the surface of the roadways being generally uneven and littered with ashes, vegetable refuse, and other objectionable matter. The channels and pavements are most defective; the footpaths are in a very bad condition, and the gully spouting absent or very defective; indeed, the gully spouting throughout the city is generally defective, and the downpipes usually discharge on to the footpaths directly.

Pigs are kept throughout the city in most unsuitable yards and premises.

There are a good many houses quite unfit for human habitation, and I am informed that though Magistrates' Orders to close some houses have been obtained these orders have not been enforced by the Sanitary Authority. A large majority of the houses in lanes, &c., off the main streets, are entirely without sanitary arrangements and many are overcrowded.

Number of orders on notices to abate nuisances or perform other sanitary work . . . . .	383	Summary of sanitary work performed since 1900.
Number of prosecutions for neglect of these notices . . . . .	69	
Number of convictions . . . . .	68	
Number of samples of food taken . . . . .	421	
Number of prosecutions with respect to these . . . . .	5	
Number of convictions . . . . .	5	
Number of houses, yards, and premises inspected . . . . .	15,000	
Number of houses limewashed . . . . .	2,400	
Number of dwellings disinfected . . . . .	20	
Articles of clothing disinfected . . . . .	125	
Patients removed to hospital . . . . .	No record.	

The following matters demand the special attention of the Sanitary Authority :—

- The Registration of Common Lodging-houses ;
- The Registration, &c., of Slaughter-houses ;
- The adoption of Regulations as to Dairies, Cowsheds, and Milk-shops ;
- The paving and drainage of lanes, passages, courts, and back-yards in the poorer localities ;
- The condition of the tenement houses throughout the city ;
- The closing of insanitary houses, and providing of healthy dwellings for the working classes ;
- The regular and periodic cleansing and limewashing of houses in courts and narrow lanes, &c ;
- The periodic cleansing of privies and ashpits ;
- The adoption of an efficient system of domestic scavenging for those localities unprovided with sanitary arrangements ;
- The prevention of " pig keeping " in unsuitable premises ;
- The removal of the manure depôt at Thomond Gate ;
- The adoption of Bye-laws under the Public Health Act ;
- The procuring of a proper ambulance van for removal to hospital of persons suffering from infectious diseases.

J. ACHESON MacCULLAGH,  
Medical Inspector.

January, 1901.

## LONDONDERRY.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE COUNTY BOROUGH.

By DR. E. CORY BIGGER.

The County Borough of Londonderry covers an area of 2,169 acres, and is situated on both sides of the River Foyle, at the head of Lough Foyle; it is altogether contained in the Londonderry Union. A large proportion of the population find occupation in the shirt factories, foundries, ship-building, shipping, and at the various railways. The population in 1891, according to the Census, was 33,200.\* During the year 1900 the birth-rate was 31·6, the death-rate from all causes 22·6, and the death-rate from the principal zymotic diseases 1·5 per 1,000 of the population. The number of inhabited houses are approximately 7,000, the density of the population being 5·28 to each house, and 17·05 to each acre. The rateable value £97,066, and the current rates are 6s. 2d. in the £, including poor-rate, water-rate, Borough-rate, &c.

The Borough is situated on three hills, the heights of which are 142 feet, 240 feet, and 270 feet respectively, and the elevation of the Borough varies from these levels down to a little above sea level. Geologically, Londonderry is on Shale rock, which, however, is overlaid in certain districts by stiff blue clay—in other parts by sand and gravel.

The condition of the public health in Londonderry may be gathered from the following tables, in which are shown the birth-rates, death-rates from all causes, and the zymotic death-rates during the five years 1896–1900, based upon the population according to the Census of 1891, which is considerably less than the estimated population for these years:—

Years.	Birth Rates.	Deaths from all Causes.	Deaths from Principal Zymotic Diseases.
1896. . . . .	30·6	23·1	4·2
1897. . . . .	30·6	21·5	2·3
1898. . . . .	31·5	21·3	3·2
1899. . . . .	32·4	23·9	2·6
1900. . . . .	31·6	22·6	1·5

The above tables are not quite accurate, owing to the fact (already mentioned) that they are calculated upon the population according to the Census of 1891.

From the above tables it will also be seen that the birth-rates are slightly above the average. When the birth-rate is high it is always a

\* Population according to the Census of 1901 is 36,613.

factor in augmenting the general death-rate and zymotic death-rate, as these rates are very high during childhood.

Notwithstanding these points, the general death-rate and zymotic death-rate should be reduced, and the Sanitary Authority should by improving the sanitary condition and paying particular attention to everything that concerns the public health, be able to considerably reduce these rates.

For the purposes of comparison, the following data are given for England and Wales :—

Years.	33 GREAT TOWNS.		67 OTHER LARGE TOWNS.	
	Total Death Rate.	Zymotic Death Rate.	Total Death Rate.	Zymotic Death Rate.
1896. . . . .	189	283	173	238
1897. . . . .	191	287	172	241
1898. . . . .	190	285	173	241
1899. . . . .	202	281	186	245
1900. . . . .	195	259	181	226

**Dwellings.** For the most part houses in Londonderry are inhabited by persons of the working-class. They are usually one storey, and built with stone or brick, many of them having only two rooms; nearly all are self-contained, only a very few being tenement houses. In the older parts of the town the houses are old, dilapidated, damp, deficient in light and ventilation; some situated in narrow lanes and back passages; many are overcrowded, and are kept in a dirty state. The yards in many instances are unpaved, or only partly paved, and defectively drained; some have no back-yards, and no back-doors or back-windows; others have a common yard and a common privy, which serves for several houses, but with few exceptions water is supplied in every house. Of the 7,000 houses, there are 1,340 houses under £4 valuation, 1,970 houses valued between £4 and £6: in all 3,310 houses, being nearly half of all the houses in Londonderry, at or under £6 valuation. On the other hand, there have been built within the past twenty years 2,986 houses. Most of these are well built, of modern construction, containing three, four, or more rooms, with yards generally paved or concreted well drained, and supplied with drain traps and well constructed ashpits and water-closets. Of the 7,000 houses in the Borough, 4,500 are supplied with water-closets. There have been no houses built by the Sanitary Authority.

The following list contains some of the worst and most insanitary houses and yards that I visited :—

- 10 Little Diamond-street.—Yard much too small; water-closet in very bad condition, not fit to be used; surface of yard dirty.
- 143 Fahan-street.—Wooden privy; drain defective; yard in a filthy condition.
- 141 Fahan-street.—This is a public-house; wooden privy; yard not properly paved nor drained; accumulation of manure in yard; the whole in an insanitary condition.

142 Fahan-street.—Yard not properly paved nor drained; roof defective; not in a fit condition for habitation.

The adjoining houses are much in the same condition.

123 Fahan-street.—This is a tenement house, which is occupied by four families—two families downstairs and two upstairs; yard is in a filthy condition from the accumulation of filth; no proper drainage; yard not paved; one water-closet, which was defective.

115 Fahan-street (and three adjoining houses).—These houses are very small; this one was overcrowded, damp, dilapidated, common yard, badly constructed ashpit.

Adam-street.—This is a narrow unpaved street, with no water supply. There are eight houses in it, the yards of which are not properly paved; privy and yard drainage both defective; earthen floors in all the houses, which are also damp, there being no spouting.

Union-street (4, 6, 8, 10, 12).—These five houses are very old and dilapidated; have no privies nor proper ashpits; the floors of the houses are earthen; the roofs are bad; there is no spouting; the houses are all damp, and are deficient in light and ventilation; these houses are totally unfit for habitation.

21 Ann-street.—Yard not completely paved; defective privy and ashpit; pigs are kept; the place is not suitable owing to the yard not being properly paved or concreted, nor properly drained.

Union-street (13, 15, 17, 19, 21, 23, 25, 27, 29, 31).—These houses have no spouting in front or back; yards are very small; no proper privies; the floors of the houses are earthen; deficient in light and ventilation. These houses are very old; it would be better if they were condemned as unfit for habitation.

Thomas-street.—The surface of this street is not properly channelled; there is no spouting on the houses, which are old and dilapidated; mostly one storey, with earthen floors; the houses Nos. 19 to 31 have a common yard, which is not paved nor properly drained; there are two wooden privies and one wooden ashpit for seven houses.

There are about forty houses in this street, and they are all much in the same insanitary condition.

Thomas-street (1, 3, and 5).—These houses have no back-doors, no yards, nor back windows, so that they have neither light nor ventilation from the back; they have water-closets off the kitchens; these have no windows nor openings of any kind to the outside; these three houses are wretched, and are totally unfit for habitation.

There is a small house in a lane off Joseph-street which is unfit for habitation, being old, dilapidated, and without any sanitary convenience.

Fahan-street, Upper.—This is a very old part of the Borough; the surface of the street, which is very steep, might be greatly improved by making proper water channels,

also by making it more even, &c. The houses are old and dilapidated; the spouting of many of them is defective; the privies, ashpits, and drainage are also defective in many instances.

- 3 Fahan-street.—In this house, at the back of the kitchen and directly off it, there is a small place where three animals are kept; this is a breach of the bye-laws, and should be prohibited; the yard was in a filthy condition.
- Howard-place (2, 4, 6, 8, 9).—These houses are below the houses in Walker's-place; they are small two-roomed houses, having no light nor ventilation from behind; damp; the back room, which is the sleeping-room, has no ventilation or light; they have a common ashpit and a privy for every two houses.
- Mews-lane (1 and 2).—These houses are behind Eden-place; owing to the state of dilapidation of the houses, yard walls, &c., also narrowness of the lane, these houses are unfit for habitation.
- 16 Eden-place.—The occupier of this house is a fowl butcher; the back premises of this house he uses for trade purposes. A large number of fowl and three pigs were being kept on the premises; the whole place was very dirty and insanitary, being unsuitable for the keeping of pigs and carrying on this trade.
- 8 Eden-place.—This is a small shop; the yard was in a shocking condition from the accumulation of ashes, vegetable and animal matter upon the surface, also water, the drain being stopped; there was no proper privy.
- Maiden's-row.—These houses have small yards; the drains are faulty; paving is bad; privies are defective. The surface of the roadway in front of this Row is kept very dirty, not being properly cleaned nor properly drained; it would require paving.
- 117 Foyle-street.—This is a lodging and eating-house, with small yard, flags of which are loose. The water-closet had a defective water supply; this house has also the use of a large common yard, which was not properly paved, ashpit overflowing. There were also five water-closets, none of them in good order, for the use of the five houses adjoining—viz., 61, 63, and 65 Bridge-street, 119 Foyle-street, and 2 Oakum-alley. These houses are old, and, in fact, the whole place is in a bad sanitary condition. Steps are being taken to get a Provisional Order for the Sanitary Authority to acquire them under an Improvement Scheme.

#### WATERSIDE :

- Cross-street (2, 4, 6, 8, 10).—These houses are boarded in off the street, having an enclosed yard in front; they have no back-yards, nor back-doors or windows; earthen floors, no spouting, and are damp; no proper drainage; defective traps in front of the houses; the

drain or sewer runs within a foot of the doors; the yard is only partly paved; no privies, but are going to erect wooden ones in front of the houses; this should not be allowed.

Cross-street, 22.—At the back of this house there is a small wooden shed; two cows are kept in it, for which there is not sufficient cubic space. This place was very dirty; there was no place for keeping milk except the kitchen; there is no back door from yard so that cows, manure, &c., have to pass through the front door.

Cross-street (16, and those adjoining).—The yards are not paved nor properly drained; no spouting; no sanitary accommodation.

Mill-street.—The houses in this street are very dilapidated, but it has been acquired by Act of Parliament by the Northern Counties Railway for the purpose of extending their premises, so that the houses will shortly be pulled down.

Irish-street.—Many of the houses in this street are thatched, dilapidated, with defective privies and ashpits; in fact the majority of the houses in this street are in a bad sanitary condition. The same applies to Bond's Close and Kenny's Close.

There are about forty-two miles of roads, streets, and lanes; most of the streets and roads are macadamized; some are paved with granite setts; the footpaths are mostly granolithic or flagged. A number of the laneways and passages are unpaved; surface uneven, and no attempt at channelling; in others the channelling is defective, the result being that they are not kept clean, and in wet weather are covered with pools of water and very dirty. The passages that serve as back streets are not infrequently littered with ashes, vegetable refuse, and other objectionable matter.

The water supply of Londonderry is obtained by gravitation from two sources, one for each side of the river. The larger supply is for the North-west side from the Creggan Valley, which is about two miles from the centre of the Borough. There are three reservoirs, the upper being a storage reservoir, the two lower ones being service reservoirs, there being one main from each into the Borough. The water is obtained from a number of springs together with that from a catchment area, which is composed of about 650 acres of agricultural land, partly cultivated, with a number of inhabited houses upon it; the sewage from these is in every instance diverted into a by-wash. But these dwellings with the manure heaps, cesspits, &c., connected with them must, of necessity, on account of their elevation, be looked upon, even after the precautions that have been taken, as sensibly contributing to pollution of the subsoil water, a portion of which must reach the reservoirs.

The upper or storage reservoir is 300 feet above sea level; the middle and lower are service reservoirs, and are 214 feet and 155 feet above sea level, and the depth of the three reservoirs are 20 feet, 60 feet, and 48 feet deep. The storage capacity in these reservoirs is 159,000,000 gallons—about 170 days' supply. The supply for the South-east side of the Borough, which is called the Waterside, is mostly from springs, the water being collected in pipes which convey it to the reser-

Roadways,  
streets,  
and pas-  
sages.

Water  
supply.

voir. (This reservoir is apparently divided into two by a bank which runs across the reservoir, but through this bank the water percolates.) The springs are situated chiefly in agricultural land; the pipes conveying the water from the springs to the reservoir are covered to prevent sewage getting into them. The same remarks apply regarding the subsoil water as at the Creggan Valley, but to a less extent. The water is conveyed from the service reservoirs at Creggan and Waterside in five iron pipes of various sizes, from 4 inches up to 15 inches.

The supply at present is intermittent, the daily consumption, including the Waterside supply, being rather under 1,000,000 gallons per day. It cannot be said that the water is filtered, but it undergoes mechanical straining by passing through a screening well, consisting of screening frames covered with gauze and filled in between the frames with crushed cinders through which the water passes. Then there is one small sand filter with a surface of 580 square yards, the filtering media being fine sand 18 inches deep, cinders 6 inches, coarse sand 6 inches, gravel 6 inches, broken stones 12 inches, rate of filtration 400,000 gallons per day.

To briefly sum up the facts elicited during the inquiry which I have made regarding this water supply, I find the purity of this water largely depends upon the precautions that are taken to prevent contamination on the catchment area; but there can be little doubt that pollution reaches the reservoirs, even with the precautions that are taken; this cannot be avoided when the catchment area (as in this case) is cultivated land with habitations upon it. On the other hand, this water has the advantage of prolonged storage which is most useful as a purifying agent, and in itself might be sufficient if it could be depended upon at all times; but should the water get very low, as frequently happens in the Autumn, after a dry season, polluting matter would accumulate on the catchment area and be washed down with the first heavy rain. The water then would be unusually polluted, and, owing to the low level of the water in the reservoirs, it would rapidly traverse the storage reservoirs and reach the consumer. In this way disease might be spread, to prevent which it should be the aim of the Sanitary Authority to supply the consumer with water of as pure and wholesome a character as possible. To secure this result it would be necessary to pass the water through properly constructed and efficiently worked filters, this being the last and only line of defence.

It should be mentioned that in 1896 the Borough Council applied for a Provisional Order for augmenting their present water supply for the North-west side of the Borough, and they are now carrying out the necessary works in connection with this—The Killea Scheme.

The scheme briefly consists of "A new storage reservoir in the Killea Valley with a capacity of about 100 million gallons supplied by a new catchment area of about 456 acres, which it is expected will afford an additional supply of 495,000 gallons per diem."

The catchment area comprised in this scheme is largely composed of mountain land, but a proportion of it is agricultural land of a similar nature to the catchment area at Creggan Valley, and the remarks made with regard to the proper filtration of the water derived from the Creggan Valley and Waterside areas are also applicable to this new scheme.

The Borough Council would be acting wisely by providing properly constructed filters for the efficient filtration of the whole water supply, unless they contemplate in the near future providing the Borough with a larger and purer supply from mountain land free from cultivation and



habitations. This undoubtedly would be the better course and the one that should have been adopted, instead of obtaining a limited supply of water of questionable purity.

Considering that the population of Londonderry has been steadily increasing, and the daily consumption of water is also sure to still further increase with the introduction of a larger number of baths and water-closets, the Borough, even with this new scheme, will soon require another supply.

The Borough is at present on an intermittent supply. This is both inconvenient and dangerous, and should never be resorted to unless in an emergency, and then only temporarily.

The system of sewerage is by gravitation, and consists of main sewers Sewers. with branches, the length of which, taken together, amount to over thirty-five miles. The main sewers are built with brick, mostly egg-shaped; the branch sewers are earthenware pipes. The outfall discharges into the river at several places; these are supplied with flood-gates on account of the river being tidal. The tide rises to the extent of eight or nine feet. There are no intercepting sewers and no form of purification, nor is there any system of flushing the sewers. The larger sewers are ventilated mostly at the level of the street, but in a few cases there are ventilating shafts. The house connections are constructed of earthenware pipes, which are trapped, and all recently built better-class houses have ventilating pipes which run above the edge of the roof, and many old houses have put in these ventilating pipes, which are a continuation of the soil pipes from water-closets when these are placed in the house. The smaller houses have mostly gully traps in the yard where slops are disposed of.

The sewerage system on the whole seems very good, but if the town extends it is possible an intercepting sewer might become necessary as well as some system of purification.

The method of disposal of excrement and house refuse for more than Disposal and removal of excrement and house refuse. one-third of the houses is the privy-midden system; the remainder have water-closets with dry ashpits. The water-closets are mostly of the modern wash-down type with 3-gallon cisterns. The privy middens which adjoin the majority of the poorer houses are faulty in construction—many are made of wood. They are frequently kept in a filthy condition; in some instances there is only one privy for several houses. The domestic scavenging is about to be undertaken by the Sanitary Authority; the scheme has already been approved of by the Corporation and is to be started forthwith. It is contemplated to begin with four horses, carts, and carters, together with eight men for emptying the privies and ashpits, &c. The Borough is to be divided into four districts, and it is intended that every ashpit and privy midden should be cleansed once in three months. Until the system has been working for some time it would be impossible to say how, and in what particulars it may require to be improved. My own opinion is that the number of men, horses and carts will require to be augmented. There can be no doubt that the Council, in undertaking the domestic scavenging of the Borough, has taken a most decided step in the interests of the public health, and the money required for carrying it out will be well spent. At present the occupiers have to pay farmers or others to empty and remove the contents of these ashpits and midden privies, the result being that frequently the contents are left to accumulate for many months unless the Sanitary Sub-Officer serves a notice compelling the occupiers to have them cleared.

The ashpits are mostly built of brick, the floors of many are

concreted, but a large number are dilapidated and would require to be repaired; very few are covered. They are mostly the receptacles of all kinds of refuse, sometimes serving for more than one house, and often receiving the contents of the adjoining privies. In many instances they are a menace to the public health owing to their faulty construction and dilapidated state, not being concreted and situate too close to houses, being frequently only a few feet from the doors and windows.

Manure  
depôts.

There are three which are situated at Pennyburn, Bishop-street, and Waterside. The one at Pennyburn is the best situated, being on slob land, no dwelling-houses being very close; the other two are close to the public roads and are, in consequence, more objectionable.

Dairies,  
cowsheds,  
and milk-  
shops.

There are about thirty registered dairies and cowsheds, and 153 retail milkshops. The dairies that are in the Borough have rarely more than one or two cows. They are usually without the proper arrangements for keeping milk in a separate apartment, nor have they the proper arrangements for washing the cans and other vessels in which the milk is kept or distributed. Most of the milk used is from dairies situated in the rural district, the milk being conveyed into the Borough in well-kept clean carts and distributed to the houses from these carts. There are no proper milkshops, but there are a number of small dealers—such as small provision dealers and small grocers who sell milk in small quantities from a vessel on their counter.

Regulations are in force for the keeping of animals.

There are a large number of piggeries in the Borough, the majority of which are made of wood, the floors being the same; some are paved or concreted below the wooden floors; few are properly constructed. The yards containing the piggeries should be concreted or flagged. The provisions of the bye-laws are not as strictly carried out as they should be.

There are about twenty-five, which are regularly inspected.

Common  
lodging-  
houses.

These are mostly large steam bake houses, and are well kept.

Bake-  
houses.

Slaughter-  
houses.

There are none except the public abattoir which belongs to the Corporation, in which all cattle are slaughtered. It is kept in good condition; but the officer in charge of it might be instructed how to detect diseased carcasses.

Notifica-  
tion of  
infectious  
diseases.

The notifications under the Infectious Disease (Notification) Act for the past year (1900) were as follows:—

Typhoid Fever, 36; Scarlet Fever, 35; Typhus, 15; Puerperal Fever, 2; Diphtheria, 8; Erysipelas, 40.

If all the cases that occurred in the Borough of the above diseases were notified, this would show a small amount of zymotic disease, but I have reason to believe that the Notification Act has not been carried out as thoroughly as it should have been.

The measures adopted for the prevention of the spread of disease were, removal to hospital, isolation as far as possible, disinfection of houses, and in many instances destruction of clothing. These measures were, I believe, well carried out.

Sanitary  
adminis-  
tration.

The Sanitary Authority of Londonderry, the County Borough Council, is composed of forty members. They meet as a Committee every second Tuesday, their regular meeting being monthly. The necessary attention is paid to the reports of the Medical Officers of Health, and Sanitary Sub-Officers, and the requisite orders made upon their reports.

Sanitary  
staff.

J. H. Fergusson, Esq., F.R.C.S.L. D.P.H., Medical Superintendent Officer of Health.

William James Robinson, Esq., C.E., Executive Sanitary Officer, who is also Borough Surveyor.

Dr. Elliott, Dr. Craig, Dr. Cunningham, Medical Officers of Health.  
Sanitary Sub-Officers—Samuel Barr, Thomas Bosg, William Jack, William M'Cleery.

Sanitary  
Sub-  
Officers.

These officers devote their whole time to the discharge of their duties, and receive 22s. per week salary. They keep diaries showing the work they perform, which the Medical Superintendent Officer of Health examines every morning, thus keeping himself informed of the amount and class of work performed by each Sanitary Sub-Officer.

The scavenging staff consists of from 14 to 18 sweepers, and from 5 to 9 carts. There are also 12 watering carts.

Hospital accommodation for cases of infectious disease is provided by the Sanitary Authority at Foyle Hill, which is well situated in its own grounds, about a mile and a quarter from the centre of the Borough. It is an hospital with 30 beds for the treatment of infectious diseases, but the number of wards should be increased, and the arrangements for the isolation of the patients suffering from the different diseases improved. There is also a Smallpox Hospital, with 12 beds, situated in the same grounds some distance from the main building. Patients are conveyed to the hospital in a good four-wheeled ambulance; there is also a two-wheeled ambulance. Fifty patients were removed to hospital during the year. The Sanitary Authority have recently accepted a tender for supplying a Washington-Lyons Steam Disinfecting Apparatus which they intend having erected at the hospital.

Hospital  
accommo-  
dation.

The following Acts have been adopted :—

The Infectious Disease (Notification) Act, 1889.

The Infectious Disease (Prevention) Act, 1890.

The Public Health Acts (Amendment) Act, 1890.

Adaptive  
Acts.

Bye-laws and Regulations are in force for the regulation of the following :—

Bye-law  
and Regu-  
lations.

- (1.) The removal of house refuse.
- (2.) The cleansing of privies, ashpits, and cesspools.
- (3.) For the prevention of nuisances arising from filth, dust, ashes, rubbish, and the keeping of animals.
- (4.) New streets and buildings.
- (5.) Dairies, cowsheds, and milkshops.
- (6.) Common lodging-houses.

The County Borough Council light the Borough with electricity and gas. The gas is supplied at the expense of the Council by the Gas Lighting Company.

Number of visits to houses and premises as reported to each meeting of the Public Health Committee, . . . . .	33,794	Sanitary work performed in the year 1900.
Sanitary Sub-Officers' notices served requiring abatement of nuisances, . . . . .	1,743	
Nuisances abated on service of Sanitary Sub-Officers' notices without further proceedings, . . . . .	1,559	
Orders made by Public Health Committee for abatement of nuisances, . . . . .	141	
Water-closets erected, . . . . .	46	
Water-closets repaired, . . . . .	77	
Privies repaired, . . . . .	74	
Ashpits erected, . . . . .	63	

Ashpits repaired, . . . . .	47
Drains made, . . . . .	11
Drains repaired, . . . . .	114
Houses limewashed, . . . . .	878
Manure removed, . . . . .	1,396
Yards concreted, . . . . .	216
Inspection of cow-keepers and purveyors of milk, . . . . .	982
Inspection of lodging-houses, . . . . .	272

Conclu-  
sions.

The Sanitary Authority might give the following matters their immediate attention :—

The insanitary houses before mentioned, many of which are not capable of being made sanitary, should be closed ; the others should be so repaired and improved that they would be sanitary. Proper sanitary conveniences should be provided where required. Houses having no back entrances should be provided with them where possible, and if these houses have privy middens, and no back entrances can be provided, the middens should either be demolished or replaced by water-closets and dry ashpits, as the contents from these privy middens can only be cleaned out by the contents being carried through the dwellings, thus causing a nuisance which is injurious to the health of the occupants.

In the cases of houses having back entrances, but with defective midden privies, the privies should be repaired, and the floors and sides concreted, to prevent pollution of the sub-soil.

Lanes, passages, and small yards should be channelled, drained, paved, &c. Eavespouting should be erected where required. The manure depôts in Bishop-street and at Waterside should be closed. The various railway companies might be induced to erect manure sidings, so that manure might be carted there and emptied into waggons, and taken to the country and sold. The Sanitary Authority might also erect a four or six-cell Destructor for the purpose of destroying decaying vegetable matter, rubbish, &c.

More attention should be paid to the carrying out of Bye-laws and Regulations, particularly the Regulations as to Dairies, Cowsheds, and Milkshops, and the Bye-laws as to the keeping of animals.

I have to thank the various officers of the Londonderry Borough Council, particularly Dr. Fergusson, Medical Superintendent Officer of Health, and Mr. Robinson, Executive Sanitary Officer, for their assistance and the information they gave me during my inspection.

E. COEY BIGGER,  
Medical Inspector.

March, 1901.

# WATERFORD.

## REPORT ON THE SANITARY CIRCUMSTANCES AND ADMINISTRATION OF THE COUNTY BOROUGH.

By DR. T. J. BROWNE.

The Waterford County Borough covers an area of 9,437 acres, and is situate on the River Suir, about ten miles inland from its entrance to the sea. The river is tidal for some considerable distance in its course inland beyond Waterford City. The river divides the district, a small area being situate on the Northern or Kilkenny side (Ferrybank). The population in 1891 was 26,203\*. During the year 1900 the birth-rate was 24·7, the death-rate from all causes 21·9, and the death-rate from the principal zymotic diseases 1·8 per 1,000 of the population. The number of inhabited houses is given as 5,137. The net annual value of property under the Tenement Valuation Act is £48,000. The income from Corporate property is between £8,000 and £9,000 per annum. The indebtedness is about £160,000. The rates of all kinds levied by the Council is about 9s. 6d. in the Pound.

General  
Description.

The greater portion of the district on the south side of the river is on a considerable elevation. The portion which abuts on the river and John's Hill is very slightly elevated above high water mark, and during very high spring tides is partially liable to flooding. The sub-soil of the lower levels is extremely damp, and abounds in springs. Many of the streets in the older part of the city are very narrow, with high buildings on either side, which shut out the sunlight and air. The principal industries are brewing, bacon-curing, and milling. Markets are held on four days weekly for sale of agricultural produce.

The hilly portions of the district are composed of slate rock with a slight covering of soil, the surface sloping considerably and being correspondingly dry and healthy. The low levels are formed of alluvial deposit, marl, and black clay abounding—these being in some places covered by made ground.

The water supply is piped into the city from Knockaderry Lake, nine miles distant. The lake covers eighty acres and has a water-shed of 2,000 acres, which is untilled and is not subject to contamination from any source. The distributing reservoir is situate at Tycor, just on the city bounds, and is capable of storing 500,000 gallons. The daily supply

Water  
supply.

\* Population, according to Census of 1901, is 26,742.

to the district is 650,000 gallons, which allows over 20 gallons per head per day. Four filter beds are provided, which are renewed as often as requisite. The water is of a peaty character, but of good quality and suitable for dietetic purposes. The better class of houses are provided with a domestic supply, and the poorer class are supplied from stand pipes which are distributed over the district.

The water works were completed in 1880, and cost somewhere about £60,000.

Sewerage.

Mr. Fleming, Borough Surveyor, supplied me with information as follows respecting the sewerage system:—The first section of the sewerage scheme has been practically completed at a cost of about £11,500, the length of sewers being nearly seven miles. Another section, including the outfall works and intercepting sewers and consisting altogether of about seven additional miles of new sewers, will be commenced almost immediately, the contract drawings and specification for same being now ready. The cost of this section is estimated at about £18,000. As new sewers are being completed, the owners of property in the several streets are being notified to make house connections and to construct water-closets, &c, but this work is not progressing as expeditiously as is desirable. The old sewers in the city were built of rubble masonry, being in all cases too large, with flat inverts, and in the lower levels of the city with very flat gradients, so that under such unfavourable conditions they were not self-cleansing. In the lower levels of the city (for a length of about four miles) the sewers are tide-locked twice daily for some hours, so that the sewage is held up in the house-drains and sewers, causing solid deposits in the sewers. It is contemplated in connection with the new sewerage scheme to erect pumping machinery at the outfall so as to prevent this most serious evil by providing for a continuous flow of sewage in the sewers, which are all provided with artificial means of flushing and laid at such gradients as to ensure their being self-cleansing. Altogether there are now nine miles of new piped sewers constructed. The entire scheme when finished will cost about £40,000.

The scheme appears to be a very comprehensive and well-designed one, and when completed the sewerage system of the district ought to be as near perfect as possible.

The old system of sewerage described by Mr. Fleming still exists in the flat of the city, and is very defective. The house drainage is not satisfactory; many of the older houses are connected with the main sewers by built drains with unseated traps, which permit the escape of sewer gas into the houses. Many of the gully traps are defective, some being of too small a pattern, others improperly set, broken or choked up. The surface of the yards in many instances are irregular, unpaved, and permit of the lodgment of liquids. In the more recently built houses the yards are either paved or concreted, and are provided with efficient drainage.

Housing  
of the  
working  
classes.

In the older parts of the city the poorer classes reside chiefly in tenement dwellings which are, as a rule, very filthy and dilapidated structures, badly lighted and ventilated. Overcrowding in this class of houses is very common. In the outskirts of the city the poorer classes are better housed and the sanitary circumstances are fairly satisfactory, except as regards domestic scavenging and drainage of yards. Within the past few years 260 cottages have been erected by the Council at a cost of about £33,000. A scheme for providing tenement dwellings is at present being considered, and will probably be carried into effect at an early date.

The new cottages are built in well-arranged streets, each having small concreted back yards, and being provided with sanitary conveniences and efficient drainage.

A necessity exists for the provision of many more dwellings for the working classes, so as to relieve the overcrowding which exists in some of the congested areas.

There are several insanitary localities in the district caused by over-crowding, filth, dilapidation, and general sanitary defects. The following places may more or less be classified under this heading, viz:—  
 Little Patrick-street area, Jenkin's-lane, Stephen-street, Alexander-street, John-street, lanes off Mayor-walk, Castle-street area, Keating's-lane, Goat's-lane, Goff's-lane, Banteen-lane, Griffin's-lane, Kineffer's-lane, Butcher's-lane, Ussher's-arch, Tanyard-arch, Peter-street, Gaffney's-lane, Stafford's-lane, Green-lane, Shortcourse, lanes off Barrack-street, Johnston's-lane, Miller's Marsh.

Congested and insanitary areas.

In some of above places there are no yards or sanitary conveniences connected with the houses.

There are only ten Registered Common Lodging-houses in the district, but there are probably many more unregistered. They are generally houses of a poor class, and do not comply with the bye-laws.

Common lodging-houses.

An abattoir has recently been provided at a cost of £2,300. It is being used only to a limited extent at present, but the number of animals slaughtered in it is daily increasing. The slaughtering is, I am informed, carried out under competent supervision.

There are three licensed slaughter-houses in the district, only one of which complies with the bye-laws as regards the distance from occupied houses. In other respects they all comply with the bye-laws.

There are four bacon-curing establishments in the district, in all of which pigs are slaughtered, close on two thousand pigs being slaughtered weekly. Two of these establishments are within one hundred feet of occupied dwelling-houses. They are all kept in a cleanly state notwithstanding the offensive nature of the trade carried on—gut-scraping, &c. The existing arrangements with regard to the removal of blood, scrapings, offal, &c., require improvement.

There are about three hundred piggeries in the district, not more than fifty of which are in conformity with the bye-laws. They are generally in close, confined yards, within a few feet of dwelling-houses, and are kept in a filthy state and not provided with proper drainage, nor is the manure regularly removed. Their condition gives rise to a very serious form of nuisance.

Keeping of animals on premises.

There are several lairs in the district in which pigs and cattle are kept for short periods previous to being slaughtered. Some of these are situate in populous localities, and are not kept in a cleanly state.

Mr. A. Dobbyn, Veterinary Surgeon, is Inspector, and makes periodical inspections of these places. There are about ten dairies and cowsheds and over fifty milkshops in the district.

Dairies, cowsheds, and milk-shops.

The dairies are kept in a cleanly state, but the cowsheds are, as a rule, badly ventilated, and are not well kept. Large collections of manure are permitted to accumulate in their vicinity and the drainage is defective.

The milkshops are, as a rule, owned by small, general dealers who sell pickled fish, paraffin oil, bread, bacon, &c., which they store in the same apartment in which the milk is kept. Many of the shops are not kept in a cleanly state. The principal milk supply of the city comes from outside the district, where no supervision is exercised as to dairies and cowsheds.

Excre-  
ment and  
refuse  
disposal.

The Sanitary Authority does not undertake the domestic scavenging. The excrement and refuse are disposed of mainly by means of midden privies with ash-pits attached, which are cleaned out only at long intervals. The ash-pits and privies are in many instances situate within a few feet of the dwelling houses, are very faulty in construction, the leakage therefrom polluting both air and soil. It is also a common practice to deposit all kinds of refuse and filth on the streets which is removed daily by the scavenging staff. The streets in the poorer localities of the city are, in consequence, in a very foul and filthy state.

There is no system of domestic scavenging or refuse removal; this work being done by the occupiers of houses when large accumulations of refuse, &c., renders the removal imperative. The poorer classes find very great difficulty in getting the refuse removed from their yards, even when willing to pay liberally for having the work done, the result being that their yards are generally in an insanitary state.

The site of the manure dépôt at Miller's Marsh is very objectionable, being in close proximity to several occupied dwellings.

Sanitary  
adminis-  
tration.

The district is under the control of the County Borough Council, consisting of forty members. The administration of the Public Health Acts is in the hands of the Public Health Committee, which is supposed to meet fortnightly. Only nineteen meetings were held during the past year. No meetings were held from the 18th August till the 30th November. The proceedings of the Committee are not very fully recorded on the Minutes.

Sanitary Staff consists of the Executive Sanitary Officer.—Vacant.

Medical Superintendent Officer of Health.—DR. KENNEDY.

Medical Officers of Health.—DR. CUTLER, DR. WHITE.

Sanitary Sub-Officers.—MR. J. FLEMING, Borough Surveyor; MR. GRANT, High Constable; J. WELSH, M. FITZGERALD.

The office of Executive Sanitary Officer has been vacant for some months, the duties being discharged by the Assistant Town Clerk, Mr. Higgins.

The Medical Superintendent Officer of Health discharges his duties efficiently, attends the meetings of the Public Health Committee, and furnishes monthly reports. His recommendations, I regret to state, are not always acted on. Notifications of infectious diseases are made to him, and the necessary preventive measures are carried out by his instructions. The Medical Officers of Health only report to the Public Health Committee matters brought under their notice by the Sanitary Sub-Officers. During the past year Dr. Cutler furnished nine reports and Dr. White none.

Mr. Fleming, the Borough Surveyor, is also nominally a Sanitary Sub-Officer for which he receives a salary of £40 per annum. He does not, however, discharge any of the duties of Sanitary Sub-Officer as defined in the Local Government Board's Sanitary Order.

Mr. Grant, High Constable, receives £20 per annum as Sanitary Sub-Officer. His duties are to superintend the work of Sanitary Sub-Officers Welsh and Fitzgerald. This duty has not been faithfully discharged. He is also Inspector under the Food and Drugs Act, for which office he receives no salary. He is also supposed to see that the man in charge of the abattoir discharges properly the work assigned to him.

Mr. Grant keeps a diary of the work performed by him, and reports to each meeting of the Public Health Committee. He has not furnished any reports to the Medical Officers of Health within the past year.

Sanitary Sub-Officers Welsh and Fitzgerald are each paid a salary of



£65 per annum for which they are supposed to devote their whole time to the discharge of the duties of the office. They begin work daily at 10 a.m., and cease at 6 p.m. They keep diaries of their work, which they submit at each meeting of the Public Health Committee, and occasionally report to the Medical Officers of Health, but judging from the condition in which I found their districts, and the absence of reports respecting the many forms of nuisances and insanitary conditions which came under my notice, I have no hesitation in stating that neither are efficient officers.

Bye-laws under the Public Health Acts have been adopted as follows:— Bye-laws.

For the regulation of common lodging-houses and houses let in lodgings.

With respect to new streets and buildings.

For the keeping of animals on premises.

For the removal of snow, &c., from footways.

For the removal of house refuse.

For cleansing privies, ashpits, and cesspits.

For the prevention of nuisances arising from filth, ashes, rubbish, and manure.

For the regulation of slaughter-houses, offensive trades, &c.

These Bye-laws are not enforced, particularly as regards common lodging-houses, the keeping of animals on premises, domestic scavenging, and the construction of water-closets, earth-closets, privies, ashpits, and cesspits in connection with buildings. Notices for abatement of nuisances, &c.

During the past year (1899) the number of notices served requiring the abatement of nuisances was 171. The number of prosecutions instituted during the same period was 58. The Infectious Disease (Notification) Act, 1889, has been in force in the district since 1893, but up to a very recent date the provisions of the Act have not been generally complied with, the result being that in many instances cases of infectious disease occurred, and proper preventive measures were not adopted. Infectious Disease (Notification) and (Prevention) Acts. This is particularly the case with regard to scarlatina, which was prevalent during the whole of last year. The Infectious Disease (Prevention) Act, 1890, has not been adopted by the Sanitary Authority.

The Workhouse Fever Hospital is the only available hospital for patients suffering from infectious diseases in the district. It affords accommodation for about sixty patients, and during the past year its capabilities were frequently taxed to the utmost. Hospital accommodation.

There is a fairly efficient disinfecting apparatus in connection with the Fever Hospital, which is the property of the Board of Guardians.

During the twelve months ended the 31st March last there were admitted to the Fever Hospital from the County Borough of Waterford:—

Typhus Fever, . . . . .	10 cases.
Enteric Fever, . . . . .	34 "
Scarlatina, . . . . .	189 "
Measles, . . . . .	54 "

Measles was prevalent in the district from February till May, 1899. Infectious Scarlatina first appeared about August, 1898, and has continued down to quite recently. The number of cases notified each month from March, 1899, up to September was small. In October the number notified was 77, November 81, December 34. In January of the present year the number dropped to 17, and in February to 11. For the year ending 1st March, 1900, 279 cases of scarlatina were notified to the Medical Superintendent Officer of Health, who informed me that

he had reason to believe that very many cases occurred which were not notified, and in which no precautionary measures were adopted. Hence the spread of the disease. None of the public schools were closed during the year under review except for the usual holidays. I was informed that in some instances children attended school whilst other members of the family were suffering from the disease at home; others attended school whilst in the peeling stage, and played about the public streets. Having regard to these circumstances it is not to be wondered at that the disease continued so very long prevalent in the district. It is only right to state that when this state of affairs was brought under the notice of the Sanitary Authority a few prosecutions were ordered, which seemed to have a salutary effect.

Whooping-cough was also prevalent during portion of the year 1899.

Diarrhoea likewise prevailed during the summer months, and influenza in the close of that year and the beginning of the present year.

A return is annexed showing the number of cases of infectious disease notified each month from the 1st March, 1899, to the end of February, 1900.

During the past year (1899) the deaths registered as due to zymotic diseases were as follows:—

Death-  
rate.

Measles,	56
Scarlatina,	17
Whooping-cough,	9
Typhus Fever,	2
Enteric Fever,	5
Diarrhoea,	24

Seventy-five deaths were registered during the year as due to phthisis or pulmonary consumption. The zymotic death-rate in the Waterford County Borough registered for the year 1899 was the highest of the twenty-two principal Urban Districts in Ireland, being 4.4 per 1,000. The general death-rate for the past year was high, being 26.4 per 1,000. The outbreaks of typhus fever which occurred are attributable to insanitary conditions, such as overcrowding and filth, &c.

The enteric fever cases were probably due to defective house drainage, permitting of the escape of sewer gas into dwellings.

The prevalence of measles, scarlatina, whooping-cough, diarrhoea, and influenza in epidemic form during the past year; the failure to properly isolate the sick, and to adopt proper preventive measures; the insanitary conditions under which a considerable proportion of the poorer classes of Waterford live, notably the state of the tenement houses, each room of which is generally occupied by a separate family, and the houses being commonly in a state of dilapidation, filthy, without a water supply or adequate closet accommodation; the filthy state of the yards, ashpits, and privies; the keeping of pigs in small, confined yards, giving rise to nuisances—to these conditions, which favour the spread, not alone of diseases of the zymotic class, but also ailments such as phthisis and other forms of tubercular disease very prevalent in Waterford, must be attributed the high death-rate of the district.

The sanitary defects enumerated above call for prompt and sustained action on the part of the Sanitary Authority; the most urgent of these being (1) the domestic scavenging, which should be undertaken by the Sanitary Authority; (2) the clearing of unhealthy and overcrowded areas; (3) the enforcement of the bye-laws relating to common lodging-houses, and the keeping of animals on premises, the construction of ashpits and privies; (4) the careful and systematic inspection of the district; and in this connection I may state that Sanitary Sub-Officers Welsh and Fitzgerald have hitherto performed their duties in a very careless and perfunctory manner; (5) the removal of the manure depôt from its present most objectionable site; (6) the provision of proper paving and drainage of yards where requisite; (7) the registration of dairies, cowsheds, and milkshops, and the adoption of regulations for same; (8) the filthy and dilapidated condition of the tenement dwellings; (9) the provision of a disinfecting apparatus; and (10) the careful administration of the Public Health Act of 1878 with regard to the provisions against infection (Sections 137 to 146).

Recommendations.

The Housing of the Working Classes has engaged the attention of the Sanitary Authority for some years past; about two hundred and sixty houses have been provided at a cost of about £33,000. A scheme for providing tenement dwellings is at present under consideration, and, when completed, will have the effect of relieving the overcrowding which exists in the congested areas.

THOMAS J. BROWNE,

Medical Inspector.

June, 1900.

## WATERFORD COUNTY BOROUGH.

### FEVERS NOTIFIED FOR 12 MONTHS.

1899.	Scarlatina	Typhoid.	Typhus.	Puerperal.	Erysipelas.	Undefined or Continued.
March, . . .	6	3	4	-	-	-
April, . . .	4	1	2	-	-	-
May, . . .	8	4	-	-	-	-
June, . . .	4	-	-	-	-	-
July, . . .	4	1	-	-	1	-
August, . . .	14	2	1	-	1	-
September, . .	19	1	-	1	-	-
October, . . .	17	3	1	-	-	-
November, . . .	51	5	2	-	2	4
December, . . .	34	3	-	1	2	2
1900.						
January, . . .	17	3	-	-	1	-
February, . . .	11	2	-	-	-	-

## WATERFORD COUNTY BOROUGH.

1890.	Monthly Mortality per 1,000.	Zymotic Mortality per 1,000.	No. of Fever Notified.
March, . . . .	32.8	13.4*	13
April, . . . .	29.6	60*	7
May, . . . .	22.9	20*	14
June, . . . .	20.3	5	4
July, . . . .	20.3	20	5
August, . . . .	21.1	40†	18
September, . . . .	20.2	3.1†	21
October, . . . .	24.4	4.5†	21
November, . . . .	25.4	6.5†	24
December, . . . .	27.9	2.2†	42
1891.			
January, . . . .	27.3	3.0†	21
February, . . . .	26.8	3.0†	13

\* Acute Epidemic of Measles.

† August. Diarrhoea and Whooping Cough.

† September. Diarrhoea.

† October. Diarrhoea and Scarlet Fever.

† November. Scarlet Fever.

† December. Scarlet Fever, Typhoid, and Diarrhoea.

1890. † January. Scarlet Fever and Whooping Cough.

† February. Whooping Cough.

## ARMAGH.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE ARMAH URBAN  
DISTRICT.

BY DR. C. J. CLIBBORN.

An inland city, and formerly a Parliamentary Borough, but ceased to be so in 1885, under the Redistribution of Seats Act, is situated in Armagh County, and Province of Ulster, about thirty miles from Belfast.

Population in 1871 was 8,946, in 1881, 10,070, and in 1891, 7,317, being an average of 21·4 persons to an acre.

Comprises within its municipal boundary an area of 343 acres 3 rods and 97 perches. The rateable valuation of the city is about £19,860.

The number of houses in the city is 1,558, of which number 159 are uninhabited.

Armagh is built on several hills, which are commonly known as Vicar-hill, Barrack-hill, Banbrook-hill, and College-hill. The streets run more or less circular round Vicar's-hill, on which the cathedral is built.

The chief trade is, I am informed, weaving and spinning. In addition, it contains the shops and places of business usual in a large country town, being a city with two cathedrals, and many residential dwellings.

Consists of stiff red clay, except in what is known as the Mall, and low meadows, which are marshy.

The old part of the city—viz., the hill on which the major portion of the city is built is Triassic (new red sandstone). If a line be taken down the street leading from the railway station, viz Banbrook-hill, to the Market House, all that portion west of that line is the above formation. This formation line widens out, and comprises the remainder of the city. South of this point there is a narrow strip of Permian running east of this line, and between it and the low-lying meadows, which are boggy, as is the Mall. This Permian comprises (shale and sandstone with Brecia) which formation surrounds the whole city, with the exception of a small strip of Lower Carboniferous (lower limestone) which runs along the higher ground on the east of the Mall and the meadows between this and the railway.

The rainfall for 1897 was 35·071 inches.

Rainfall

„ 1898 „ 31·763 „

„ 1899 „ 32·501 „

Average from 1866 to 1890 was 31·45.

The greatest length of the town from north to south is 1 mile 618 yards, and the greatest length from west to east, 1 mile 570 yards.

## BIRTH AND DEATH RATE.

For Year ending 30th September, 1898.

Deaths from all causes,	153	= a rate of 20.91 per 1,000.
Zymotic Diseases,	23	
Phthisis,	21	
Births,	231	= a rate of 30.20 per 1,000 of population.

1899.

Deaths from all causes,	138	= a rate of 18.60 per 1,000.
Zymotic Diseases,	15	
Phthisis,	20	
Births,	192	= a rate of 26.23 per 1,000.

1900.

Deaths from all causes,	153	= a rate of 20.77 per 1,000.
Zymotic Diseases,	11	
Phthisis,	24	
Births,	201	= a rate of 27.60 per 1,000.

Total Births for three years ending 30th September, 1900—614

Total Deaths, . . . . . 443

Total Deaths from Zymotic, . . . . . 49

Total Deaths from Phthisis, . . . . . 65

Phthisis death-rate high—works out at over 14 per cent. of all.

Sanitary  
staff.

The Urban District Council of Armagh is the Sanitary Authority for the city, and consists of eighteen members.

The Medical Officer of Health is Dr. ROBERT GRAY.

The Consulting Medical Officer of Health, Dr. HAMPTON GRAY.

Executive Sanitary Officer, T. G. PENE, Esq.

Sanitary Sub-Officer, JAMES NELSON.

The last-mentioned officer also holds the offices of Town Sergeant, Dairy Inspector, and Assistant Water Inspector. In addition, he has to see after the cleansing of the streets by the contractor, and to keep a record of the time of the men employed by the Council. He delivers all notices, such as summonses to attend meetings, and occasionally aids the Executive Sanitary Officer in his clerical work, but this only to a slight extent.

No Report Book is kept by the Executive Sanitary Officer; the Public Health Minutes are fully written up, but the Report Book should also be kept, as a proper check on sanitary work of Council cannot be easily carried out if this record is not kept and regularly written up.

The Sanitary Sub-Officer has not been provided with a diary for this portion of his work. Urban Council should provide him with one, which should be laid before them at their meetings.

On looking over blocks of reports made to the Medical Officer, I find that only about 38 reports were made for the years 1899 and 1900 by the Sanitary Sub-Officer. In 1898 he made, with the Medical Officer of Health, a thorough inspection of the city, but in the two years mentioned 38 reports would not represent the number of serious sanitary defects remaining unabated in the city. This officer has not sufficient time at his disposal to attend properly to his duties as Sanitary Sub-Officer, and the Urban Council should, I think, appoint an additional Sanitary Sub-Officer, so as to have important sanitary work efficiently carried out.

As directed by Local Government Board, I visited Armagh and made an inspection of the district, to ascertain if the city was in such a good sanitary condition that if plague should appear the disease would not be likely to spread. Present sanitary condition.

I regret to state that it is far from being so.

I understand there are about five miles of streets in the city. These could not be kept in a worse condition. The mud is occasionally raked to either side of the streets and left there for a considerable time; in some of the streets the inhabitants told me that these heaps of mud and other refuse had been lying there for at least two months. From my observation I should say the streets were very seldom cleansed. This work is supposed to be performed under contract, but it is very badly performed. Roads and streets.

The greater number of the houses in the city are apparently of great age. The internal cleanliness of the poorer class of houses varied very much; but, in a great number of them there was much room for improvement. Dampness in this class of houses was very common. Usually this was due to dampness about their foundations from wetness of soil in the neighbourhood, which was often caused by absence of proper eaves, gutters, and spouting, or by soakage of slop water from the surface of the ground; also in some of the streets the yards and gardens of the houses sloped towards the houses. Back yards of the greater number of the houses in Armagh, especially in the list of streets appended to this report, are very small. The drainage of these yards, where any exists, is almost exclusively by means of surface channels or badly-paved gutters. Many of the yards are not paved, and such paving as there is I noticed to be of a very bad description, generally cobble stones, affording no protection to soakage of unwholesome matter into the ground. The surface also was very irregular, and it was common to see slop water and feculent matter lying about these yards and passages, in the crevices of the cobbles, and in depressions of the surfaces. Yards and houses.

There are five courts in Armagh, named, respectively, Kelly's, Walker's, Devlin's, Weaver's, and Cottage courts.

Except as regards the better class and more modern dwellings, excrement and refuse are disposed of mainly by means of privies and ashpits. The number of the houses in the city provided with water-closets number, I should say, something over 300. Between 250 and 300 houses have fairly good class privies and ashpits, but the remainder are not either of a good pattern or construction. Excrement and refuse disposal.

The common arrangement consists of a small midden or ashpit uncovered, with uncemented walls or floors, and connected with a small privy, so badly constructed that the contents of the privy flow into the ashpit, thus causing not only a serious nuisance, but also a source of danger to the public health, as the yards in which these privies and middens are situated are, as a general rule, very small, the privies and ashpits, often full of liquid filth, being in close proximity to the windows of the dwelling-houses. The result of this arrangement is that a large portion of the small open space in the immediate vicinity of these dwellings is occupied by these structures, and that nuisance arises from soil and air pollution, the floors and sides of privies and middens not being cemented.

On inquiry I found that in some cases these middens had not been cleansed for two years, and in a large majority of the cases not for months, with very few exceptions, while the privies and middens were full of most abominable filth.

The Urban Council do not undertake the removal of filth, except in a few isolated cases.

Dr. R. Gray, Senior Medical Officer of Health, in July, 1898, made a house to house inspection of his district, and laid before the then Town Commissioners a valuable report, dealing with every house in his district. In every case where he found a small badly-constructed privy and ashpit in close proximity to the dwelling-house, he advised the providing of a water-closet and removal of privy, but the Urban Council did not agree to his recommendation as to providing of a water-closet. I have personally inspected a very great number of these houses, and there is no doubt in my mind that Dr. Gray's advice should be carried out.

Appended to this report is a list of the worst streets and houses in the city, and from my inspection I consider little or nothing has been done by the Sanitary Authority on the report of the Medical Officer referred to.

The state of affairs existing in 1898 practically exists still.

Slaughter-houses.

The Urban District Council do not appear to possess any bye-laws on the subject, but the Sanitary Sub-Officer inspects them weekly. There does not appear to be any regular inspection of meat and fish supplies.

The following is a list of the slaughter-yards in the city, and a report on the sanitary condition I found them in at date of my visit :—

#### JOHN SHERRY AND GEORGE SHERRY.

Slaughter-house in English-street.

About 100 head of cattle and 300 head of sheep are slaughtered in the year by J. Sherry, and about 162 cattle and 520 sheep by G. Sherry. Part of the offal is used for feeding pigs, and in the yard attached to slaughter-house, I found a large heap of manure mixed with blood and offal.

#### CHARLES WARMOLL.

Slaughter-house in Irish-street.

About 300 head of cattle are slaughtered yearly here and 600 head of sheep. This slaughter-house, which was very unfavourably reported on in 1898, by Dr. R. Gray, has been considerably improved; the floor is flagged, but requires some repairs and cementing.

Slaughter-house refuse is thrown on manure heap, which is removed once a week in summer, and fortnightly in winter. It was far the best kept slaughter-house in the city.

#### ROBERT BALLANTINE, of Scotch-street.

Slaughter-house in Dawson-street.

Floor of this slaughter-house is concreted. All liquid is discharged into town sewer; manure and offal were lying on the ground in a corner of the yard attached to slaughter-house. There was a very objectionable smell from this.

About 100 head of cattle and 150 sheep slaughtered here, and few sheep are slaughtered in Scotch-street, behind sale shop.

#### JOHN WINDEN, Scotch-street.

Slaughter-house in Moyne-street.

About 104 cattle and 312 sheep are slaughtered yearly here.

Garbage is thrown on manure heaps; slaughter-house floor is badly paved and allows of seepage into surrounding soil. In this slaughter-house there was a large heap of fowl bones, and generally the slaughter-house was in a dirty condition.



A. HUGHES, formerly Sloan, Scotch-street.

Slaughters in the country.

Messrs. WARD, Ogle-street.

About 52 head of cattle and 104 sheep are slaughtered here yearly.

Slaughter-house floor is not well paved; blood and water must soak into surrounding soil.

GEORGE M'KENNA, English-street.

The slaughtering carried on here is of a peculiar character. About 50 head of cattle are slaughtered; and there is no butcher's shop attached, only what is known as "fallen cattle" are slaughtered, which, on inquiry, I ascertained, means sick cattle. None of this stuff is sold in the town, but some is sent to Glasgow. I was informed of the name of the man to whom it was consigned, and can give it if required. To what use this flesh is put I cannot say. Some of the flesh is cooked, and used for feeding pigs in Armagh. At date of my inspection there were eight pigs, but as a rule there are, I believe, sixteen. There were also three cows in the yard, but, owner of yard is a cattle dealer, and these, I was informed, were not kept for dairy purposes. The Sanitary Sub-officer, however, told me he did sell milk.

In this yard there was a large heap of manure, mixed with blood, which had been standing there for two months, and liquid from this flows through the yard into a channel and then into town sewer.

At date of my visit a carcass was hanging up, which was badly diseased, having gangrene all over the shoulders.

The sanitary condition of these premises was a disgrace to any city and a source of danger to the public health. The selling of milk from premises kept as these were must be a source of danger to the public health.

JOHN PARR, Market-street.

Floor of slaughter-house is partly brick and partly cemented.

Liquid refuse from slaughter-house discharges through the yard under an out-house into another yard, and then into main sewer.

In the yard there was a large heap of manure mixed with offal, which must have been there for some time.

About 200 head of cattle and 624 sheep are slaughtered yearly. This yard was not in a good sanitary condition.

The position of these slaughter-houses is very objectionable; all are too near dwelling-houses; the floors of every slaughter-house should be concreted, not paved, so as to prevent soakage of offensive matter into the soil.

Offal and other refuse should in summer be removed on each day that slaughtering is carried on.

The amount of manure and other objectionable matter allowed to accumulate in yards attached to the slaughter-houses is, I think, dangerous to the public health. Cattle after slaughter must for a time remain hung up in the slaughter-houses, with the result that the flesh is exposed to the foul air in these yards.

The Urban Council would, I think, do well to have a public abattoir, with a proper inspection of the meat supply, but, failing this, stringent bye-laws as to existing slaughter-houses and knackers' yards should be adopted as soon as possible.

The Sanitary Sub-Officer, I find, has made reports regarding these slaughter-houses, the latest reports being dated October 4th, 10th, 24th, and 31st, 1900. In his reports he speaks of these slaughter-houses being clean, or fairly clean, and states that in the yards there was some manure in pits, or heaps of manure in pits. I saw all these yards, and the manure must have been in most of them for a considerable time, so that he hardly appears to realise, as a Sanitary Sub-Officer should do, the importance of having the surroundings of slaughter-houses kept in a good sanitary condition. I do not attribute neglect to him, but rather a want of recognising the importance of this part of his duty.

Dairies,  
Cowsheds,  
and milk-  
shops.

There are about fifteen dairies and six milk shops within the urban area.

Mr. James Nelson, Sanitary Sub-Officer, is Inspector of Dairies, and reports upon their condition once a month; he keeps a record of this, but beyond the powers given by the Public Health Act, there are no local regulations in force regarding these places.

I inspected most of these dairies, and, with very few exceptions, found the yards in a most insanitary condition—large heaps of manure in close proximity to the byres, and byres ill-ventilated and crowded. Regulations under the Dairies and Cowsheds Act are very badly required in Armagh City.

As a rule, the milking of the cows was carried on in the byres, which, with one or two exceptions, were not kept in a cleanly state, and the large heaps of manure in close proximity to the byres must lend itself to possible contamination of the milk.

Water  
supply.

Is derived from Lowry's Lake, the catchment area of which consists, for the greater part, of grazing land.

An analysis of this water was made by Sir Charles Cameron in June, 1880, of which the following is a copy:—

	No. 1.	No. 2.	No. 3.
Total Solid Matters, . . . . .	1960	2100	2000
Including:—			
Albuminoid Ammonia, . . . . .	0011	0012	0012
Saline Ammonia, . . . . .	0001	0005	0103
	0005	0007	0015
Nitrous Acid, . . . . .	traces	traces	traces
Nitric Acid, . . . . .	traces	traces	traces
Chlorine, . . . . .	1288	1396	1294
Containing Nitrogen, . . . . .	0015	0160	0045
Equal to Common Salt, . . . . .	2135	1903	2435
Hardness before boiling, . . . . .	56°	52.50°	56°
Hardness after boiling, . . . . .	27°	27.50°	29°
Oxygen required to oxidize Organic Matter,	0236	0230	0270
Total Nitrogen combined as nitrogen, acid, ammonia, and organic matter, . . . . .	0057	0063	0057
Sulphates, . . . . .	mere traces.	mere traces	mere traces
Microscopic appearance, . . . . .	All	fairly	good.

No. 1.—Key Boyd's Field.

No. 2.—McClough's side of Lake.

No. 3.—Taken from Tower Basin.

Sir Charles Cameron reports in favour of all these specimens. He states they are not up to the standard of absolute purity, but they can by no means be regarded as bad, or even inferior waters. No analysis has since been made.

There are two small reservoirs, which hold a six-day supply, used only for watering the streets, as they have no filter beds.

The other reservoir is, I am informed, of ample capacity, and can provide twenty-five gallons per head, calculated on a population of 10,000. Filter beds are cleaned every second year.

Urban Council are at present carrying out, at considerable expense, a new system of sewerage for the entire district. All the old built sewers are being replaced with pipes. Sewerage.

The final disposal of sewage is to be by septic tanks, but the special form has not yet been decided on. The engineers have subject still under consideration.

I. The Urban Council should, I think, give thorough and systematic attention to insanitary premises in this district and should exercise more strictly the various powers they possess, or can obtain, to remedy their condition in detail. One course which I am informed has been followed more than once should cease, viz., making certain orders to remedy nuisances within a certain period and at another meeting postponing action on these orders for a considerable period, or rescinding original order. In some of these cases seven days was originally given; this was, afterwards, increased to two months. Recommendations.

In particular they should proceed to deal with :—

- (a.) Houses unfit for habitation.
- (b.) Premises with drains, improperly constructed.
- (c.) Unpaved, or insufficiently paved yards, and it would be best to concrete yards.
- (d.) Nuisances arising from the accumulation of refuse and excrement. 50th Section of Public Health Act, 1878, should, I think, be strictly enforced in this district.

II. The Urban Council should take steps to do away with the objectionable privy middens in this district and to substitute a satisfactory system of removal of dry refuse and excrement.

For the latter, water carriage should be employed where sewers are available for the purpose. This course has been urged on them constantly by their Medical Officer of Health.

III. The Urban Council should adopt the Infectious Disease (Notification) Act, 1889, and Infectious Disease (Prevention) Act, 1890, as wherever these Acts have been adopted they have always led to the early stamping out of infectious diseases.

The Council have under consideration the adoption of Bye-laws, and these should include the registration and regulation of lodging-houses, and also of dairies, cowsheds, and milk-shops.

IV. Sanitary Staff should, I think, be increased. The present Sanitary Sub-Officer's duties are more than he can satisfactorily carry out, though I believe him to be a willing officer. He cannot, however, devote the necessary time to his duties as Sanitary Sub-Officer, and he should, I think, have an assistant.

V. The surface drains of the yards and streets in the city should, I think, receive special attention. At present they are, as a rule, badly paved, allowing of soakage of deleterious matter into surrounding soil. There is no system as to where these yard drains discharge; some into sewers, others on to surfaces of adjoining ground or street. All should discharge directly into sewer. Many of them should be piped, especially those running close to the backs of houses.

VI. Where circumstances do not permit of erecting water-closets—and this, I think, would very seldom occur—privies should be built of good material, stone or brick, and contents should not be allowed to discharge into ashpits.

Ashpits, as is contemplated by the Public Health Act (Ireland), 1878, should be properly constructed and covered. Walls and floors of both ashpits and privies should be cemented, so as not to allow of soakage of injurious matter into the adjoining soil.

It is to be hoped the Urban Council will take these subjects promptly into their serious consideration, as, in the present insanitary condition of the greater part of Armagh, if plague or typhus should break out, the consequences would, undoubtedly, be most serious.

#### LIST OF INSANITARY STREETS AND HOUSES IN ARMAGH.

ABNEY-LANE.—Several houses in this lane without privy or ashpit. Yards badly paved.

Where there are privies they are of bad construction, and kept in a filthy condition.

BANBROOK HILL.—Want of proper privy and ashpit accommodation in several houses; in some places none.

In a large number of cases privies and ashpits had not evidently been cleaned for a considerable time.

WOOD'S ENTRY.—Four houses, no back doors, no yards, and only one privy and ashpit for the four; a most insanitary place.

LOWER ENGLISH-STREET.—Which includes Kelly's-court and Walker's Entry. Among the sanitary defects in a large number of the houses in this part of the city the following are the most notable:—

Want of privies and ashpits, filthy yards behind houses, yards small, unpaved or badly paved, house unfit for habitation, manure heaps of long standing, close to the sleeping rooms.

ROSS-LANE.—Four houses unfit for human habitation. An ashpit was in this lane, which had not been cleaned for a year.

CASTLE-STREET.—Houses without sanitary accommodation. Houses with badly constructed privies and ashpits, some of which had not been cleaned for a year. Surface of yard in very bad order.

Surface sewer running behind some of the houses carried down offensive matter. Complaints were made to me of the abominable smell from this.

PRINCE-STREET OR HILL.—Large number of houses without privies or ashpits. An open sewer runs along back of these houses, and discharges on to the open street. A very offensive odour arises from this.

In the yards immense heaps of manure mixed with human excrement. When this is removed it has, in many cases, to be removed through the houses.

Privies and ashpits, where they exist, are in bad order, and of bad construction.

**CALLAN-STREET.**—A large number of the houses in this street are unprovided with privies or ashpits. Defective surface drains and yards, either not paved or very badly paved. Large collections of offensive matter in small yards. In many cases human excrement lying about the yards. Privies where they exist, as a rule, of bad construction, and kept in a filthy state. Houses unfit for human habitation.

**CALLAN-STREET-LANE.**—Very much the same remarks apply.

**CHARTER SCHOOL-LANE.**—Houses without privies or ashpits, bad surface sewers in an offensive condition.

I may say here with regard to other streets in the city, the names of which follow, that in all of them there are houses in large numbers suffering from the common defects mentioned above. In almost every case the yards were either not paved, or, if paved, so badly that the soaking of deleterious matter into the soil must occur. The manure heaps were of long standing, the ashpits could not have been cleaned in most cases for months, in some for a year or more. It was a common occurrence to see feculent matter on the manure heaps and lying about the yards and passages. The privies and ashpits, as a rule, of very bad construction. There were a few exceptions to this, and in some cases the Medical Officer's recommendations as to providing water-closets and cementing the yards, were carried out. Where this was done the premises showed clearly the advantage of this course of action:—

**BARRACK-HILL, PALACE ROW, GAOL SQUARE, LITTLE BARRACK-STREET, JENNY'S-ROW, IRISH-STREET, LINENHALL-STREET, and portions of OGLE-STREET and SCOTCH-STREET.**

CUTHBERT J. CLIBORN,

Medical Inspector.

December, 1900.

P.S.—I wish to add here that I am greatly indebted to Dr. R. Gray for the aid he gave me while inspecting Armagh. He gave up a considerable portion of his valuable time and went round the city with me while I was making my inspection. His local knowledge of the sanitary defects in the city was of great aid.

C. J. CLIBORN.

## BALLYMENA.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE BALLYMENA URBAN  
DISTRICT.

By DR. C. J. CLIBBORN.

Ballymena, a market and trading town, is situated in almost the centre of County Antrim, and is built, for the greater part, on an elevation. The linen trade, which was introduced in 1773, is carried on extensively.

The geological formation of the district in the upper part of the town is composed of drift deposits of sand, gravel, and boulder clay, and in the lower portion of tertiary basalt.

Population. The population as per Census, 1891, was 8,655, but owing to an extension of the boundary in 1892, the population was, by a local census, ascertained to be almost 10,000. The estimated population in the year 1900 is 12,000.

During the year 1900 the birth-rate was 28·9, the death-rate from all causes 20·3, and the death-rate from the principal zymotic diseases 1·7 per 1,000 of the population.

Area. The area in the year 1891 was 466 acres, and the valuation £21,432, but on account of the aforesaid extension of the boundary, and the general growth of the district, the area in the year 1900 was 1,220 acres, and the rateable valuation £29,200.

Housing of the population. The following is a summary of the inhabited houses, with their description and residents:—

There are 1,044 houses, valued at £5 and under, occupied by day labourers and others, earning from 10s. to 12s. per week. This class of house, usually one storey, consists of kitchen and small bedroom on the ground floor, with an attic bedroom over. Frequently in this class of house there is a water supply and privy to each three or four tenants, and a gravelled yard in common; but very often the refuse and excrement have to be removed through the house for want of outlet at rare.

There are 785 houses, valued at £10 and under, occupied by mill operatives and others, earning from 12s. to 20s. per week. These houses are, most of them, of two stories, and contain kitchen, living room, and scullery on the ground floor, with two bedrooms on the second and, in many instances, an attic under the slates. The better class of these houses have an enclosed yard, with water supply and privy to each, and a laneway behind for removal of house refuse, &c. There are 301 houses, valued at £20 and under, occupied by factory overseers, mechanics, &c., earning from 20s. to 40s. per week. As a rule these are substantially built, and the sanitary arrangements fairly good, water supply and w.c., with enclosed paved or flagged yard in almost every case. There are 102 houses over £20; these houses are in almost every case fitted

with the latest sanitary and other arrangements, and are, as a rule, in first-class condition.

A new system of sewerage was carried out between the years 1886-1887, and the majority of the old stone or brick sewers removed, and tile pipes substituted. The public service sewers range from 9-inch to 12-inch, and the private house connections are mostly 6-inch, but in very few cases are there disconnecting traps on these sewers. About 120 perches of built sewers are still in use within the district, but these are gradually being replaced by tile pipes as they become defective.

The sewers are constructed in straight lines, and can be inspected with lights from manholes to lamp eyes; the gradient of these sewers ranges from 1 in 200 to 1 in 500.

The whole system is periodically flushed through the street gullies and manholes with high pressure water, and a number of drains can be and are flushed fortnightly from the river.

The sewers are ventilated direct to the surface of the street through charcoal boxes, fixed about 200 yards. This mode appears to prevent accumulations of sewer gas.

The sewage of the district is conveyed to a point about a mile outside the boundary by three lines of tile pipes, of 24 inches, 15 inches, and 12 inches diameter, respectively, the gradients being 1 in 1,000 high level, 1 in 324, and 1 in 326 low level. The sewage is all discharged into settling tanks, where the solids are held and the liquid discharged by overflows into filters, top layer composed of burnt clay, and fine cinders and coarse materials below; from thence it passes through inspection chambers, and is finally discharged into the river in a fairly purified state. The number of houses having flush water-closets is 971, and the number having ordinary privies is 1,293.

House refuse and excrement is periodically removed by farmers to the country districts and used as manure. The only dépôt provided by the Sanitary Authority is for street sweepings, which is situated at the Waveney-road, almost in the centre of the town. The accumulation here is very small, owing to the fact that the sweepings are also drawn away and largely used by farmers for top-dressing.

The water is collected at Quollie Reservoir, which is eleven acres in extent, and situated nine miles from town; the elevation is 835 feet above sea level and 500 feet above the town. The catchment area consists of 1,555 acres of mountain pasture land, and the storage capacity of the reservoir 73,000,000 gallons. The water is of first-class quality.

Composition of a specimen of water forwarded by the Town Commissioners, from a street fountain at end of Alexander-street:—

An Imperial gallon contains:—	Grains.
Total solid matter, . . . . .	13.30
Consisting of mineral and saline matters, . . . . .	8.50
Organic and volatile matters, . . . . .	4.80
Chlorine, . . . . .	0.99
<i>One-million part yield</i>	
Free ammonia, . . . . .	0.025
Albuminoid ammonia, . . . . .	0.070
Hardness, $5\frac{1}{2}$ degrees.	

Remarks. The water is of excellent quality, and exhibits no traces of sewage or other pollution, and is well suited for all domestic purposes. It contains merely a small amount of salt, and its "hardness" is only  $5\frac{1}{2}$  degrees. It is also a good water for washing, &c.

(Signed), JOHN F. HODGES, M.D.,  
Member of the Council Inst.,

Queen's College, Belfast.

11th November, 1891.

The filters are situated at Oaklands, five miles out. They are 150 feet above level of town, and are of the usual class of sand filters—composition two 6-inch layers of sand and six 6-inch layers of stone, ranging from the size of salt to coarse gravel. The filters are two in number and are used alternately, one being cleaned while the other is in use. The filtered water is stored in a clear water basin, holding three days' supply when full. In the summer of 1899 the water supplied from Quolie Reservoir, viz., 200,000 gallons per day, was found insufficient to meet the requirements of the district, the residents in the higher portions of the town being frequently without water. Steps were immediately taken for the purpose of increasing the supply from this source to 300,000 gallons daily, but unforeseen circumstances prevented the carrying out of this project, and the matter remained some months in abeyance. However, early in the year 1900, the Council succeeded in obtaining an auxiliary supply in perpetuity of 100,000 gallons per day from an out-worked iron mine at Clonetrace, within a mile of the filter beds. In May, 1900, this additional quantity was linked on to the Quolie supply, and has been abundant and continuous ever since. This water is also of finest quality.

Government Laboratory and Laboratory of the Public Analyst of the  
Counties of Antrim, Armagh, Tyrone, Donegal, and Carickfergus.

14, Alfred-street, Belfast,

21st March, 1899.

Report on the Examination of a Sample of Water received from  
Mr. H. O'Hara, Ballymena:—

An Imperial gallon contains:—	Grains.
Total solid matter, consisting of, . . .	13.0
Mineral and saline matter, . . .	8.5
Organic and volatile matter, . . .	4.5
Chlorine, . . . . .	1.5
Free ammonia, . . . . .	.00105
Aluminoid ammonia, . . . . .	.0042
Nitrates, . . . . .	.11
Hardness, . . . . .	7.9

This water is free from pollution, and is suitable for drinking so far as chemical evidence goes.

The water has been largely availed of by householders, as the following summary will show:—

No. of houses where water supply taken in, . . .	1,846
No. of houses supplied from public fountains, . . .	418



## BIRTH AND DEATH RATE FOR THE YEAR 1900.

Deaths,	.	.	.	.	.	.	.	285
Births,	.	.	.	.	.	.	.	330

## ZYMOTIC DISEASES,—DEATHS.

Influenza,	.	.	.	.	.	10
Diphtheria,	.	.	.	.	.	4
Croup,	.	.	.	.	.	2
Pertussis,	.	.	.	.	.	10
Zymotic Enteritis,	.	.	.	.	.	2
Typhoid,	.	.	.	.	.	2
Diarrhoea,	.	.	.	.	.	3
						—
						33

Infants under one year, . . . 41

There are seven bake-houses in the Urban District, which are kept in a fairly good sanitary condition.

Ballymena town has seventeen slaughter-yards within the urban area. I visited the most of these. The chief defect I found was the insanitary condition of the surroundings, and in some instances want of proper floors; the slaughter-yards were as a rule kept clean by the owners, but in many cases there was a large accumulation of manure close to the slaughter-house, mixed with the contents of privies and ashpits. The proximity of this refuse may lead to contamination of the meat supply.

There are twelve public dairies in Ballymena. I saw some of these and, as a rule, they were kept clean, but with perhaps one exception, there was not sufficient cubic space, and the ventilation was scarcely sufficient. I beg to attach list, giving number of cows kept and cubic space of sheds.

The following list of streets and courts represents, I should say, the most insanitary portions of Ballymena Urban District. The chief defects are keeping, in some instances, pigs in too close proximity to dwelling-houses; in others privies of bad construction, with open ashpits, the walls or floors of neither being cemented to prevent soakage of deleterious matter into the surrounding soil.

In some cases, though the privies were of fairly good construction, the ashpits attached were so badly constructed that they were practically cess-pits, and in nearly every case full of filth. In many cases the yards were too small and badly paved; in these small yards the privies and ashpits are situated so close to the dwellings that they are not only a nuisance, but dangerous to the public health.

Lists of streets and courts:—Coach-entry, Coach-court, Robert-street, Galgorm-street, Flag-lane, Alexandra-street, Springwell-street, John-street, Albert-street, Railway-street, Adam's-court, White's-row, and Linenhall-street. In Coach-entry and Springwell-street there are some houses hardly fit for human habitation.

Recom-  
menda-  
tions.

The Urban Council would, I think, do well to take the following subjects into their consideration:—

Disconnecting sewers of the most modern type should be more largely adopted, so as to prevent any possible escape of sewer gas into the dwelling-houses. I have been informed that few of the houses are provided with proper disconnecting traps.

Refuse and excrement should be removed at more frequent intervals from the yards.

The yards in the town should be better paved, so as to prevent soakage into the surrounding soil.

The present objectionable privies and ashpits should be replaced, where possible, by water-closets and properly constructed ashpits. As in a large number of houses in the town the contents of the privies and ashpits have to be removed through the dwelling-houses, Urban Council should adopt some means which would obviate this practice. The slaughter-houses in the town, though as a rule kept clean, in the majority of cases were badly situated, being in crowded portions of the town; in most cases the yards were too small and the sanitary surroundings not good. In some cases privies, ashpits, and manure heaps were close up to the slaughter-yard. Urban Council might consider the advisability of providing a public abattoir, and of adopting regulations under Dairies and Cowsheds' Order. I wish to state here that I think there is a great improvement in the sanitary condition of Ballymena. Since I made my last inspection the Urban Council appear anxious to improve the sanitary condition of the town. The different officers carry out their work well.

CUTHBERT J. CLIBBORN,

Medical Inspector.

March, 1901.

#### SCHEDULE A.

Rateable value in 1890, £21,432; assessment value, £20,746.

	£	s.	d.
Total income from all sources, . . . . .	4,436	9	2
„ expenditure „ . . . . .	5,565	2	5

Rate, 4s. 6d. in the £.

Rateable value 1900, £29,200; assessable value, £27,397.

	£	s.	d.
Total receipts, including poor rate, . . . . .	7,906	6	4
„ expenditure „ „ . . . . .	7,967	1	5

Rate, 5s. 4d. in the £.

	£	s.	d.
Contributions to County-at-large charges, 1891, . . . . .	726	16	2
„ „ „ „ 1900, . . . . .	1,385	0	0

Rainfall, year 1891, . . . . .	24·61
„ 1900, . . . . .	46·9

*Adoptive Acts in force within the District.*

- Towns Improvement (Ireland) Act, 1854; adopted December, 1854.  
 Public Health Acts (Amendment) Act, 1890; adopted 6th July, 1891.  
 Infectious Disease (Notification) Act, 1889; adopted 23rd March, 1891.  
 Infectious Disease (Prevention) Act, 1890; adopted 23rd March, 1891.  
 Small Dwellings Acquisition Act, 1899; adopted 4th December, 1899.

## LIST OF OFFICIALS.

<i>Name.</i>	<i>Office.</i>
Henry O'Hara,	Town Clerk, Surveyor, and Executive Sanitary Officer.
Dr. R. Currie,	Medical Officer of Health.
Terence Donaghy,	Sanitary Sub-Officer.
Charles Forsythe,	"

## SCHEDULE B.

## BALLYMENA URBAN DISTRICT.

## NAMES AND ADDRESSES OF COW KEEPERS IN ABOVE DISTRICT.

No.	Name.	Street.	No. of Cows.	Dimensions of Cow House in Cubic Feet.
1	William Miller, . . .	Henry-street, . . .	7	1,580
	Do. No. 2, . . .	do., . . .	4	924
2	Robert McCann, . . .	do., . . .	4	1,680
3	Daniel Cooney, . . .	Lanshall-street, . . .	3	2,025
4	Robert Fullerton, . . .	do., . . .	2	504
5	George Smith, . . .	Cullybackey-road, . . .	5	2,160
6	William Keroshan, . . .	Duke-street, . . .	6	2,106
7	Thomas Harper, . . .	Springwell-street, . . .	3	1,660
8	Mrs. J. Eider, . . .	William-street, . . .	6	2,448
9	Thomas Manson, . . .	Ballymoney-street, . . .	3	770
10	William Kennedy, . . .	Church-street, . . .	3	770
11	James Wilson, . . .	Thomas-street, . . .	3	2,376
	Do. No. 2, . . .	do., . . .	2	1,122
	Do. No. 3, . . .	do., . . .	2	512
12	James Henry, . . .	Mill-street, . . .	3	1,215

## BIRR.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE BIRR URBAN DISTRICT.

BY DR. D. EDGAR FLINN.

Extent  
and popu-  
lation.

The area administered by the Birr Urban District Council is about 1,539 acres in extent, and has a population of about 4,313. The rateable value amounts to £9,105 15s. and the number of inhabited houses is 944.

The Urban District Council consists of nineteen members.

Birr is the centre of an important and populous district, and was originally constituted an Urban Sanitary District in 1879. The town has the great advantage of possessing many wide thoroughfares and open spaces, two important factors that tend materially to aid the sanitary conditions and circumstances under which the inhabitants live.

Water  
supply.

The public water supply is derived from pumps, fourteen in number. The majority of the pump wells, I am informed, are shallow and, practically, all of them situated in thickly-populated areas, being in some instances quite near to dwelling-houses. The liability to pollution is very obvious, particularly in the case of those pump wells situated in localities where the population is densest. A town of the size and importance of Birr should not be dependent for its public water supply on a system that has so many objections. This water supply, in the natural order of things, must be liable to pollution, as the danger of contamination is always present where a public water supply is derived from pump wells within an inhabited area, and more especially where such wells are situated in thoroughfares in a thickly-inhabited district. One of the problems that requires the close and earnest attention of the Council is that of a pure water supply.

Sewerage  
system.

The greater portion, if not practically all, the sewage of the town is conducted through rubble-built masonry sewers constructed from time to time. A new pipe sewer of the fire-clay, glazed and socketed pattern has been recently laid in Brendon-street, and this, I am informed, is the only main sewer of modern construction in the town. The larger volume of the crude sewage ultimately discharges into the river at the southern end of the Urban District. Another portion is discharged into a large catchpit situated in a field at Eden. The gradients of the sewers vary in different portions of the town, the inclinations as regards fall being from about 1 in 50 to 1 in 775. Several of the main sewers have no system of ventilation. A few are, however, ventilated by means of iron pipes which are carried above the summit of the dwelling-houses. In consequence of there being an inadequate water supply, it is quite obvious that no proper provision can be made for the flushing of the sewers, a contingency which might have serious results in the future, as well as being always a present danger. The absence of a thorough system of ventilation and proper method of flushing are

two questions deserving of the earnest attention of the Council. No system of sewerage can be considered efficient that is not provided with both these necessary and most important accessories.

The conditions under which a considerable proportion of the labouring classes live in Birr could not be more unfavourable, and there are certain areas that cannot be regarded by any means as satisfactory from a sanitary point of view, more especially in view of the fact that these areas are practically all situated in the centre and more congested portions of the town.

Condition of the dwellings of the labouring classes in Birr.

Shamble-lane contains a number of dwelling-houses of a very inferior class, which, on the occasion of my visit, were in a very bad state of repair. These dwellings have no back-yard accommodation whatever, the result being that house refuse and offensive vegetable and organic matter finds its way on to the narrow thoroughfare fronting the houses. These houses cannot be regarded as fit for human habitation, lacking, as they do, the most elementary essentials of health. In Foyle's-lane there are also a considerable number of small houses, about sixteen in all, with small filthy back yards, kept in a most insanitary condition, a few of them being unfit for human habitation.

Skinner's-lane is another locality containing a number of small cottages, about fourteen in number. These cottages are generally kept in bad repair, have wretchedly small and ill-ventilated dwelling-rooms, while the back yards are in a very filthy condition. It is very probable overcrowding takes place at times in small and confined dwellings of this class, and it is in such localities that outbreaks of infectious disease nearly always have their origin. The habit of accumulating and storing manure, vegetable and other refuse matter in small back yards in close proximity to dwelling-houses is also fraught with grave danger to the public health of the town. The absence of privy and ashpit accommodation also tends to aggravate the insanitary condition of the houses inhabited by the labouring classes.

Amongst other localities in Birr that possess houses that have no back-yard accommodation may be mentioned Bridge-street and Mill-street.

It is quite evident that one of the problems that should occupy the attention of the Council is the better housing of the working and labouring classes, as no doubt the conditions under which the majority of this class is at present housed are most unfavourable, and the question is one deserving the earnest attention of the Council.

A code of bye-laws is in operation dealing with:—

Bye-laws.

- (1) Common lodging-houses;
- (2) Slaughter-houses;
- (3) Keeping of animals;
- (4) Cleansing of footpaths, removal of house refuse, and the cleansing of privies and ashpits.

There are eleven registered common lodging-houses, which are periodically inspected. Those that I saw were kept in a cleanly condition, and are, I am informed, regularly inspected.

Common lodging-houses.

**Slaughter-houses.** The condition of some of the slaughter-houses that I visited was, from a sanitary point of view, not satisfactory, offal and organic refuse matter being allowed to remain too long without being removed, and in one or two instances there was an imperfect system of drainage. More frequent inspection of the slaughter-houses and compliance with the bye-laws should be carried out.

**Public cleansing.** The public cleansing of the Urban area might with advantage be much improved, especially in regard to the laneways and smaller thoroughfares where, in the interests of the public health, it is very desirable that daily scavenging should be carried out. In these localities refuse matter (both vegetable and organic) is allowed to remain for much too long a period. The principal thoroughfares, however, are well scavenged and attended to. The absence of privy and ashpit accommodation is very noticeable, and the result is that the back yards of the dwellings inhabited by the poorer classes are kept in a very uncleanly state, organic and vegetable filth accumulations being very general. A system of domestic cleansing under the immediate control and supervision of the Urban Council would be of undoubted advantage to the health of the town.

**Cowsheds and dairies.** The Urban District Council have not adopted any regulations for the management of cow-sheds, dairies, and milk-shops, and, as I understand, there are forty-two altogether within the Urban District, it would be well for the Council to frame regulations dealing with their administration.

The adoption by the Council of the provisions of the Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890, would also be very necessary in a town of the size and importance of Birr.

D. EDGAR FLINN,  
Medical Inspector.

March, 1901.

## BLACKROCK.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE BLACKROCK URBAN  
DISTRICT.

BY DR. T. J. BROWNE.

The Urban District of Blackrock, which embraces Blackrock, Booterstown, Williamstown, Stradbroke, and portion of Monkstown, is situate on the south side of Dublin Bay, and about four miles distant from Dublin. The district was formed into a township by a special Act of Parliament (the Blackrock Township Act), in 1863. The area of the district comprises about 1,080 statute acres. The population in 1891 was 8,401\* ; the number of inhabited houses 1,447, and the number of persons to statute acre, 7·8. During the year 1900 the death-rate from all causes in the Blackrock Registrar's district was 20·7, and from the principal zymotic diseases 1·7 per 1,000 of the population. The rateable valuation is £48,000. The total rates levied for all purposes amount to seven shillings and sixpence in the pound. The total indebtedness in respect of loans amounts to £34,344. The margin of borrowing powers is £50,000.

General  
Description.

The district is largely a residential one, the poorer class of the population being comparatively small. There are no industries in the district.

The poorer classes, who form a small proportion of the population, reside chiefly in Sweetman's-avenue and in the courts and laneways off this avenue, in George's-avenue, Paradise-row, Beach-avenue, and Stradbroke village. They are, for the most part, badly housed. The houses are one-storey buildings, having one or two apartments, badly lighted and ventilated, with no back yards or else yards in common to several. The yards, as a rule, are unpaved and badly drained. Midden privies or trough water-closets, common to several houses, is the rule. These are usually close to the dwellings, and kept in a filthy state. The number of houses of this class would probably amount to between two and three hundred. Many of them are quite unfit for habitation, and should be closed up. Fifty-five dwellings have been provided by the Sanitary Authority under the provisions of the Artisans' Dwellings Acts. These houses are of a suitable class, and in good sanitary condition.

Dwelling  
accommoda-  
tion.

\* Population according to Census of 1901 is 8,712.

## Water supply.

The water supply of the district is supplied by the Dublin Corporation from the Vartny system. All the better-class houses have separate connections with the mains. The poorer class of houses are supplied from stand pipes erected at convenient places. The water supply is ample for all purposes, and the quality good.

## Sewerage and drainage.

All the streets and roadways in the district are sewered, with the exception of Stradbrookroad, which is now about to be sewered. About three-fourths of the entire system of sewerage is constructed of glazed earthenware pipes, properly laid and jointed. The remaining one-fourth is constructed of rubble masonry. The rubble sewers are by degrees being converted into piped sewers. All sewers are properly trapped, and provision made for ventilation. The better class of houses are all connected with the sewerage system. The poorer class of houses have no connection, but have gully traps in their vicinity. About one-third of the sewage system is on the gravitation principle. The sewage of the other two-thirds is pumped into the high-level main sewer. There are three pumping-stations. The pumping power is insufficient, a considerable quantity of sewage finding its way to the foreshore at Seapoint. This is particularly the case during periods of rainfall, when storm-water enters the sewers. The outfall of the sewerage system is the same as for the Kingstown Urban District, viz., into a large impounding tank at Dunleary, close to the seashore, which is discharged on ebb tides into twenty-five feet of water at a distance of nearly a mile from the shore.

## Excrement and refuse disposal.

The excrement of the better class of houses is disposed of on the water-carriage system, each house having a water-closet. Some of the poorer class of houses have trough water-closets, which are common to several houses. Others have privy middens, also common to several houses. These privy middens are often in a very filthy state, overflowing, and in close proximity to the dwellings. The privy middens are cleaned out two or three times during the year, and the contents deposited, with other refuse, in the public park. The domestic scavenging is undertaken by the Sanitary Authority, and is done by contract. The great majority of the houses are provided with movable dust-bins, which are emptied on alternate days by the scavengers. The work is said to be done satisfactorily.

## Slaughter-houses.

There are five private slaughter-houses in the district, all of them situated in populous localities, and close to dwelling-houses. They are fairly suitable as regards structure, drainage, and water supply, but the surroundings, in some instances, are very bad, collections of manure and offal, also piggeries, being close to the slaughter-houses. The bye-laws are not enforced.

## Dairies, cowsheds, and milkshops.

Regulations respecting dairies, cow-sheds, and milk-shops have been adopted, but are not enforced strictly. The principal milk supply of the district comes from outside sources.

There are twenty-one registered cow-sheds, twelve dairies, and five milk-shops in the district. The cow-sheds are for the most part in back yards attached to dwellings. Some of the sheds are actually placed against the back walls of dwelling-houses, and the majority are too close to dwellings. Some are in small confined yards in populous localities. The sheds are, as a rule, fairly well constructed, drained, and ventilated, but in many instances manure is permitted to accumulate in their vicinity. Pigs are also kept in the yards in some cases, and cleanliness is not properly observed.



The dairies are, as a rule, only used for storing milk-cans and milking utensils, the milk being sent direct to the customers. They are clean and, for the most part, suitable.

The milk-shops are all kept in a cleanly state, and are in separate apartments from the dwelling-houses. Only milk, bread, and butter are disposed of in these shops.

The Public Health Committee of the Blackrock Urban Council meet regularly every fortnight. Orders are made on the reports of the Medical Officer of Health and Sanitary Sub-Officer, and enforced.

Mr. R. F. Heron, Executive Sanitary Officer.

Sanitary  
staff.

Dr. G. C. Armstrong, Consulting Sanitary Officer.

Dr. J. W. Boyce, Medical Officer of Health.

Mr. F. F. Byrne, C.E., Surveyor.

Mr. J. Guy, Sanitary Sub-Officer.

Mr. H. Bailey, Clerk of Works and Dairy Inspector.

The Medical Officer of Health furnishes occasional reports to the Public Health Committee. The Sanitary Sub-Officer furnished 600 reports to the Public Health Committee, and eight reports to the Medical Officer during the past twelve months; 173 notices were served requiring the abatement of nuisances, and one prosecution took place during the same period. The Sanitary Sub-Officer does not keep a diary showing the work which he performs, and does not carefully inspect the district.

There is no hospital for infectious diseases in the district. Patients suffering from diseases of an infectious nature are usually sent to the Union Hospital at Loughlinstown, or to the Cork-street Fever Hospital, Dublin. There is a suitable ambulance provided by the Sanitary Authority for the conveyance of patients to hospital; also a disinfecting apparatus.

Hospital  
accommoda-  
tion, &c.

Bye-laws relating to the following matters are in force in the district:—

Bye-laws  
and  
regula-  
tions in  
force.

- (1) Cleansing of premises.
- (2) Nuisances.
- (3) New buildings.
- (4) New streets.
- (5) Slaughter-houses.
- (6) Common lodging-houses.
- (7) Houses let in lodgings.

The Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890, have not been adopted. The neglect of the Sanitary Authority to adopt these Acts is a serious blot on the sanitary administration of the district.

## CONCLUSION.

The matters which most urgently call for the attention of the Sanitary Authority are as follows:—

The closing of insanitary dwellings and the provision of healthy dwellings for the working classes.

The abolition of the midden privy system and the substitution of the water carriage or pail systems. Each house should be provided with separate closet accommodation where practicable.

The rubble sewers should be replaced by properly-constructed piped sewers. Additional pumping power should be provided to raise the sewage from the low to the high levels.

The site of the manure dépôt in the public park is most objectionable. The Sanitary Authority should take into consideration the question of providing a refuse destructor. An abattoir should also be provided.

The regulations respecting dairies, cow-sheds, and milk-shops should be strictly enforced.

More careful inspections of the district by the Sanitary Sub-Officer should be insisted on.

THOMAS J. BROWNE,  
Medical Inspector.

December, 1900.

## BRAY.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE BRAY URBAN DISTRICT.

BY DR. T. J. BROWNE.

Bray is a maritime town, situate in the Barony of Rathdown. The greater portion of the town is in County Wicklow, and the remainder (Little Bray) in County Dublin. The River Dargle divides the two portions. The town has increased greatly within recent years, the population, according to the Census of 1891 was 6,888, which, during the summer months, is nearly doubled, Bray being a favourite seaside resort. The area of the district is 1,044 acres, and the valuation, £30,000. The total rates levied amount to 9s. in the pound.

General  
Description.

The number of occupied dwellings in the district is about 1,500. The houses occupied by the better and middle classes are, as regards sanitation, construction, &c., fairly well circumstanced. Those occupied by the poorer class are, in many instances, of a very bad description, being one-roomed dwellings, dilapidated, insanitary, and kept in a filthy state. Some are back to back, with no back yards, and where there are back yards they are usually unpaved and undrained, with one privy or water-closet common to several houses. This is particularly the case in Little Bray, where this class of property is chiefly to be found. Piggeries in small confined yards, and close to dwelling-houses, are common. Fowls are also generally kept by the poorer people, and contribute largely to the insanitary conditions. The following is a list of the localities of most insanitary property in the district: Sheridan's-lane, Dodd's-court, Pollard's-court, Ryan's-court, Dunn's-court, Burke's-lane, Casey's-lane, Purcell's Fields, and Hudson's-terrace. I understand the Sanitary Authority have in contemplation a scheme for providing 140 dwellings under the provisions of the Housing of the Working Classes Act, at an estimated cost of £20,723. The rents of the houses will range from 1s. 6d. per week to 4s. The scheme, when carried, will confer a great boon on the district, and will, if the insanitary property be demolished or put in a sanitary state, go a long way to remedy the existing evil caused by the bad housing of the working classes.

Dwellings.

The water supply of the district is obtained from the Vartry, under contract with the Corporation of Dublin, twenty gallons per head per day being the quantity contracted for at a cost of 4d. in the pound on the valuation of the district. All the houses, with the exception of the poorer class are provided with domestic supplies. There are twenty-two public fountains and stand pipes distributed over the district for the supply of the poorer class of the population. The water is of good quality and sufficient in quantity.

Water  
supply.

All the streets in Bray are sewered. The sewers are constructed of glazed earthenware pipes, except in Main-street, Castle-street,

Sewerage.

Back-street, and Killarney-road, where the sewers are rubble-built and permit of sewage matter percolating into the surrounding earth. Rats gain access to these sewers and burrow into the houses, so that by this means sewer gas may find its way into the dwellings. These sewers should be relaid with glazed earthenware pipes. The outfall of the sewerage system is into the sea at deep water. All houses, except the poorer class, have connections with the sewerage system, but whether the connections are properly made and free from defect there was no information forthcoming.

Excre-  
ment and  
refuse  
disposal.

In all the better class houses, and in some of the poorer, the excrement is disposed of on the water carriage system. Midden privies are in use in some of the poorer class of houses, one privy with ashpit usually serving for several houses. The privies and ashpits are generally too close to the houses, and are kept in a filthy state.

The Sanitary Authority undertake the domestic scavenging of the district. Ashbins, with which many of the houses are provided, are emptied bi-weekly, and the contents carted to the manure depôt. The privies and ashpits are cleaned out only at irregular intervals, and are generally overflowing before being emptied. There are two manure depôts within the township, one on the foreshore near the railway station, and the other on a vacant plot of ground adjoining the River Daigle. The situation of both depôts is objectionable.

Slaughter-  
houses.

There are seven registered slaughter-houses in the district, some of which are in confined yards close to dwellings, and are not kept in a satisfactory condition. Cleanliness is not observed, manure and offal are allowed to accumulate, and piggeries are to be found in close proximity to some of them.

Common  
lodging-  
houses.

There are only two registered common lodging-houses in the district. The accommodation available is insufficient for the number of lodgers which are sometimes kept. The bye-laws are not observed.

Dairies,  
cowsheds,  
and  
milkshops.

There are 32 registered dairies, 22 cow-sheds, and 2 milk-shops in the district. The dairies are, as a rule, situate in the dwelling-houses, but in separate apartments, and are fairly suitable, and kept in a cleanly state.

The cow-sheds, with few exceptions, do not comply with the bye-laws with respect to the keeping of animals. They are, for the most part, situate in populous localities, close to dwellings, and do not comply with the regulations as regards construction, cleanliness, drainage, and paving, while collections of manure are generally to be found close to the sheds, and, in some instances, piggeries.

Sanitary  
adminis-  
tration.

The Council meet regularly for the transaction of public health business. Orders are made on the reports of the Medical Officers of Health and Sanitary Sub-Officer, and enforced when requisite.

Sanitary  
staff.

Mr. P. McDonnell, Executive Sanitary Officer.

Dr. Rafferty, Medical Superintendent Officer of Health.

Dr. Brew, Medical Officer of Health.

Mr. P. F. Conaher, C.E., Town Surveyor.

W. McClelland, Sanitary Sub-Officer.

J. Johnston, Dairy Inspector.

The Medical Superintendent Officer of Health reports regularly to the Sanitary Authority on matters affecting the public health. During the past year the Medical Officer of Health furnished 47 reports to the Sanitary Authority, and the Sanitary Sub-Officer, 212 reports; 163 notices for the abatement of nuisances were served,

and 24 prosecutions instituted. The district is not as carefully inspected as necessary by the Sanitary Sub-Officer.

The scavenging staff consists of two superintendents and fifty men, fourteen of whom are employed in domestic scavenging, and the remainder on the roads.

There is no hospital for infectious diseases in the district. Patients suffering from diseases of this nature are usually sent to the Union Fever Hospital at Loughlinstown. Hospital for infectious diseases. Disinfecting apparatus.

The Sanitary Authority contemplate providing an efficient disinfecting apparatus for the district. At present the one at the Fever Hospital at Loughlinstown is used when requisite. An ambulance has been ordered, and will be available in a short time. The ambulance, the property of the Rathdown Rural District Council, has hitherto been utilised when required.

The Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act 1890, have been adopted, and are in force in the district.

Bye-laws relating to the following matters have been adopted:— Bye-laws and regulations in force.

1. New buildings and streets.
2. Scavenging and cleansing of footways, &c., and removal of house refuse.
3. Prevention of nuisances arising from filth, dirt, dust, ashes, and rubbish.
4. Keeping of animals.
5. Common lodging-houses.
6. Houses let in lodgings.
7. Slaughter-houses.
8. Market and tolls.
9. Water supply.

Regulations respecting dairies, cow-sheds, and milk-shops are in force in the district.

The district is lighted by electricity. There are 200 public lights distributed over the township Lighting.

The matters which most urgently call for the attention of the Sanitary Authority are as follows:— Conclusion.

1. The provision of healthy dwellings for the working classes, and the remedying of the existing insanitary dwellings.
2. The remedying of defective sewers and the provision of drainage in undrained yards and premises.
3. More careful scavenging of the district, both domestic and general.
4. The abolition of privy middens, and the substitution of water-closets or the pail system.
5. The enforcement of the bye-laws, particularly as regards the keeping of animals on premises, prevention of nuisances, &c., &c.
6. The selection of a better site for a manure dépôt, or the provision of a refuse destructor.
7. More systematic and careful inspection of the district by the Sanitary Sub-Officer.

THOMAS J. BROWNE,

Medical Inspector.

January, 1901.

## CARLOW.

## REPORT ON THE SANITARY CIRCUMSTANCES AND ADMINISTRATION OF THE CARLOW URBAN DISTRICT.

BY DR. D. EDGAR FLINN.

Brief  
sanitary  
history.

The Carlow Urban District is situate partly in the County of Carlow, and partly in the Queen's County, a bridge over the river Barrow connecting the suburb of Graigue (which is in the Queen's County) with the town. The town is governed by a Council consisting of eighteen members.

The population of the area comprised within the Urban District is about 7,000, and the number of inhabited houses is 1,322. The annual income derivable from all sources is about £3,950, as follows:—

## INCOME FROM ALL SOURCES.

Borough Rate, ... ..	£1,700	6	9
Poor Rate, ... ..	1,202	15	9
Water Rate, ... ..	280	8	7
Petty Sessions' Fines, ... ..	55	14	11
Government bounty in lieu of Rates (on Government property), ... ..	48	19	1
From Local Government Board on account of salaries of Sanitary Officers, ... ..	15	17	7
From County Council for maintenance of Mail Roads, ... ..	36	10	6
Probate Duty, ... ..	93	4	2
Dog Tax, ... ..	21	13	1
Water Installations, ... ..	8	18	9
Tolls, Markets, ... ..	160	1	7
Tolls, Fair Green, ... ..	231	15	7
Grave Spaces, St. Mary's Cemetery, ... ..	54	7	6
Town Hall Lettings, ... ..	24	10	0
From County Council <i>re</i> Guardians and County Council elections, ... ..	1	5	0
Sale of Hay, St. Mary's Cemetery, ... ..	3	2	6
Sale of Road Scrapings, ... ..	12	18	6
Miscellaneous, ... ..	0	18	0
Total for year, ... ..	£3,953	7	10

Carlow is the market town for a considerable agricultural area, and contains numerous places of business conducted on a large scale. There are several flour mills, malthouses, iron foundries, mineral water manufactory, saw mills, &c. The area of the township is 598 acres. The public (electric) lighting of the town is carried out by the Council, and a public market-place in connection with the town hall was established in 1886 at a cost of £3,600.

Provisional Orders have been obtained as follows:—

1. Transfer of Grand Jury powers over roads and bridges to Urban Sanitary Authority, and Public Works, 1883.
2. Carlow Waterworks, 1893.
3. Adjustment of financial relations between Urban District and County of Carlow, 1901.

The geological formation of the town partakes of the character of the limestone formation with a limestone gravel covering of variable depth, intermingled in some places with rock. This obtains in that portion of the town situated in the County of Carlow. In the Queen's County part of the town the geological formation is of the clay and slate species, with an interspersed covering of rock formation, and underneath a thick clay sub-soil. Geological formation.

Carlow has been in possession of a good and ample water supply for some years. The cost of the scheme was £13,500. The supply is derived from the Killeshim stream as well as other smaller tributaries. The water is impounded in a reservoir at Killeshim, which is about three miles distant from Carlow in the Queen's County, and is conveyed by a gravitation system in pipes to the town. The catchment area is situate in the townland of Keelogue, and contains about 900 statute acres, and is composed of both peaty and pasture lands, and there are comparatively very few inhabited houses within this area. The storage reservoir is capable of containing 15,000,000 gallons, and provides for a pipe delivery of 160,000 gallons per diem. There are two filter beds, and the filtering materials used are fine sand, gravel, and pebbles. The filter beds are cleansed alternately at frequent intervals. The height of the reservoir over the lowest level of the town is about 270 feet. I am informed that the filtration system, which is very carefully attended to, has vastly improved the quality of the water supply. The following is the most recent analysis of the water supply:— Water supply.

#### CARLOW WATER SUPPLY, KILLESIM.

7th December, 1896.

Colour looked at through a tube two feet long, ... ..	Deep yellow.
Odour at 100 deg. F. ... ..	Nothing peculiar.
Total Solid Matters, ... ..	8.400
Including:—	
Aluminoid Ammonia, ... ..	0.009
Saline Ammonia, ... ..	0.002
Nitrous Acid, ... ..	None.
Nitric Acid, ... ..	Traces.
Chlorine, ... ..	0.795
Equal to Sodium Chloride, ... ..	1.310
Sulphuric Acid, ... ..	Traces.
Equal to Calcium Sulphate, ... ..	Traces.
Phosphoric Acid, ... ..	Faint trace.
Hardness, ... ..	4.5 degs.
Sugar test, ... ..	Good.
Microscopic Examination, ... ..	Good.

This water is clear. It deposits on standing a slight sediment. It is soft and well adapted for washing purposes. Although the

amount of albuminoid matter is somewhat high, it is evidently derived not from sewage, but from comparatively innocuous peaty substances. On the whole, this water is fit for potable purposes, but many people may not like its colour.

CHARLES A. CAMERON,  
Public Analyst for County of Carlow.

Sewerage  
and  
drainage.

The sewerage of the town, taken as a whole, appears to be in a fairly satisfactory condition, though there are yet some portions of the Urban District that require an efficient system of sewerage. All the sewage of the town discharges directly into the Rivers Barrow and Burren. From a sanitary point of view, this discharge of crude sewage into the rivers that flow through the town cannot be regarded as satisfactory, and must eventually affect the public health of the Urban District.

The town sewers were constructed at various intervals. The majority are of the rubble masonry pattern, with brick inverts, but in more recent years the earthenware pipe system has been carried out, the pipes, varying from fifteen inches to twelve inches in diameter. I am informed that the great majority of the houses are connected with the main system for the purpose of drainage. There is, however, no map of the sewerage system, and in a town of the size and importance of Carlow an authentic record should be available, showing the line of the sewerage system as well as the house drainage connections. No proper provision has been made for the ventilation of the sewers. In fact there is no system of ventilation. Efforts should be made to provide ventilators at least at some of the more important junctions and terminals of the main sewers.

Public  
and  
domestic  
cleansing.

The public cleansing and scavenging of the smaller thoroughfares and bye-lanes might be much improved. In some of the narrower lanes house refuse and vegetable matter is allowed to remain too long without being removed. The condition of the small back yards of the dwellings inhabited by the poorer classes also requires the earnest and sustained attention of the sanitary officials. Accumulations of manure in back yards appeared to be very general on the occasion of my visit of inspection, and these accumulations in the immediate neighbourhood of dwelling-houses are not very conducive to the health of the inmates, and is also very prejudicial to the general health and well-being of the town. The Council might in this connection consider the advisability of adopting a system of domestic cleansing. Such system, if properly administered, would prove of great service to the town. A serious and dangerous nuisance is caused by the accumulations and storage for lengthened periods in small back yards of organic and vegetable refuse matter. The scavenging arrangements appear limited for a town like Carlow. I understand that the Council hire the services of one cart and horse with attendant. A permanent scavenging staff under the immediate control of the Council would achieve much better results, and should be appointed.

Cowsheds  
and  
dairies.

The Urban District Council have not formulated any bye-laws dealing with the control of cowsheds and dairies. Some of the cowsheds I visited were by no means kept in as cleanly a condition as they should be, and arrangements should be made for the removal of manure from such premises more frequently than at present.



The fact of there being such a large number of cow-sheds (43) in the Urban District is a strong reason why a code of bye-laws should be in operation, more especially as the cubic air space in the cow-sheds is often insufficient, and the ventilation defective.

There are seven slaughter-houses in the Urban District. Those Slaughter-houses that I visited were fairly well kept, but frequent inspection should be made of all slaughter-houses in the Urban District, and bye-laws made for their regulation.

During the year there have been—

Prosecutions under the Public Health Act, ...	4
Notices served to abate nuisances, &c., ...	197
Notices served by Sanitary Sub-Officer on Medical Officer of Health as to sanitary requirements,	323

Summary  
of sanitary  
work.

There is no disinfecting apparatus for the Urban District, the one in use at the Union Workhouse being availed of.

A code of bye-laws dealing with the keeping of animals is very much required and necessary in Carlow. The keeping of pigs in small and confined back yards should on no account be permitted.

The Sanitary Staff is composed as follows:—

Consulting Sanitary Officer—Dr. W. O'Meara.  
Medical Officer of Health—Dr. Edmund McDonald.  
Executive Sanitary Officer—Mr. James Kelly.  
Sanitary Sub-Officer—John Cummins.

#### RECOMMENDATIONS.

The Council should adopt a code of bye-laws dealing with dairies and cow-sheds, slaughter-houses, keeping of animals, &c.

The Council should take into consideration the question of providing main sewers in those localities where they do not at present exist, and ventilating the existing sewers.

The adoption of a system of domestic scavenging and cleansing directly under the control of the Council would be very necessary and desirable from the point of view of the health interests of the town. In the absence of privy and ashpit accommodation in dwellings inhabited by the poorer classes, a system of domestic cleansing and filth removal is desirable and essential, and the Council might undertake this work in pursuance of the provisions of Section 52 of the Public Health (Ireland) Act, 1878.

The Council should also consider the advisability of adopting the Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890.

D. EDGAR FLINN,

Medical Inspector.

March, 1901.

## CASTLEBLAYNEY.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE CASTLEBLAYNEY URBAN  
DISTRICT.

By DR. C. J. CLIBBORN.

**Situation of town.** Castleblayney is a market town in the County of Monaghan, situated on the borders of Lake Muckno. According to the Census of 1891 it has a population of 1,731.

The number of houses is stated to be 394.

The principal street is called Main-street, or West-street; other streets branching off it are named Brewery or New-street, Muckno or Nohle-street, Henry-street, Church-street, and York-street.

**Staff and Urban Council.** The Urban Council is composed of nine members, who have a staff consisting of:—

Executive Sanitary Officer.

Sanitary Sub-Officer.

Medical Officer of Health.

(The office of Engineer is at present vacant, but advertisements have been issued for one.)

**Sewerage.** There is no proper or complete system of sewerage for this town; all the main sewers in the town are constructed of stone, and were never intended, nor are they fit, for conveying sewage matter, as they allow of soakage of deleterious matter into the surrounding soil. In addition, from their construction, they are liable to be choked, and no means exist for their flushing except the rainfall.

In three of the streets, viz.: Church, Thomas, and York-streets, portions only are sewered.

The contents of these so-called sewers, which were originally mainly constructed to carry off road surface drainage, but in many cases now convey sewage matter are discharged, sooner or later, into Lake Muckno, or into ditches in the fields surrounding the town, or into the streams.

Some of these streams have large deposits of sewage in their beds, which are not carried away by the water, and are only very slightly covered by water. In the ditches, where sewage is deposited, a large amount of feculent and other deleterious matter lies, which, in the summer months, must be not only a great nuisance, but also a possible source of serious danger to the public health. In the sewers there is no proper system of ventilation. It is quite clear that the existing sewers are not only inadequate generally to the wants of the town, but are also dangerously defective, in consequence both of the physical conditions associated with the outfalls, and the construction and arrangements of the sewers themselves.

**Yards—Paving and draining.** In nearly the whole of the town the condition of the yards is most unsatisfactory. The yards generally were in a filthy state, the surface uneven, either wholly unpaved, or the paving is of such an irregular character that water and slops stand in pools. Large heaps of manure were kept in these yards, in some cases close up to the windows of the dwelling-houses.

The gutters, where they exist in these yards, are faulty in construction, being objectionable open drains. These should be abolished, and covered drains with trapped gullies substituted.

With very few exceptions, the privies in the town are of bad construction and in a dilapidated condition; 158 are built of brick or stone, 79 were merely wooden huts, and all, as a rule, kept in a filthy condition. Thirty-two houses have water-closets. There were ninety-three ashpits, but in no case did I see a covered ashpit, or privy with cemented floor and walls. The ashpits, in many cases, were simply holes in the ground, the contents of the privies discharging into them. Pollution of the soil from this cause must be very great in this town. Middens and privies.

One hundred and twenty-five houses in the town are unprovided with any sanitary accommodation.

There are three slaughter-houses in the town. None of them were in a satisfactory condition. The floor of the slaughter-house was, in each case badly paved, and no proper arrangement exists for disposal of blood and refuse generally; these are allowed to flow out into a badly-paved gutter, on to a badly-paved yard, and from that into the sewer. Large heaps of manure were also in close proximity to the dwelling-house and slaughter-house. Slaughter-houses.

I was informed that, as a rule, the cows were milked at the farms, but dairy-shops exist in the town. No regulations have been adopted under the Dairies, Cowsheds, and Milkshops Order, and the District Council would do well to take this subject into their serious and immediate consideration. Dairies.

The public water supply consists of four pumps and three wells; in addition there are, I am informed, seventy private pumps and four supply wells. Water supply.

The water of one of these public pumps (Market-house) some time ago was condemned after analysis; the pump known as Railway Pump, is liable to run dry in the summer. Taking the supply as a whole, public and private, it cannot be said to be quite inadequate, but there is no supply by which flushing of sewers can be carried out.

The Urban Council would, I think, in the first instance, do well to have samples from each of the sources of public supply, and from a large number of private supplies, forwarded for analyses. This is especially important from the fact that, as a rule, the wells supplying the pumps are not more than thirty feet deep, that there is a large bed of rock under the town, and this may be a means of conveying impurities from the soil into these public and private supplies.

In conclusion, the Urban Council should, I think, give thorough and systematic attention to insanitary premises in the town, and exercise the various powers they possess, or can obtain, to remedy these conditions in detail. I was informed the Council are about to adopt various bye-laws which will cover some of these matters. In particular, they should, I think, proceed to deal effectively with:— Recommendations.

- (a.) The existing main sewers of the town, which at present are not fit for the purpose, and are also not complete, portions of certain streets being unprovided with main sewers. A better method for the final disposal of the sewage should not be adopted, as at present the Rivers Pollution Prevention Act is disregarded.

- (b.) Premises with drains improperly constructed.
- (c.) Unpaved and insufficiently paved and uneven yards, with faulty and untrapped gutters.
- (d.) Nuisances arising from the accumulation of refuse and excrement. A dépôt for this purpose should be provided.
- (e.) Insufficient sanitary accommodation and replacing existing defective privies and middens with properly-constructed ones.
- (f.) Analyses of water from both public and private supplies, removal of any possible source of contamination to the public supply. Urban Council would, I think, do well to take into consideration the advisability of obtaining a piped supply, which would enable them to flush the sewers, and the advice of a skilled engineer might be obtained for this purpose.

CUTHBERT J. CLINBORN,

Medical Inspector.

October, 1901.

## CLONAKILTY.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE CLONAKILTY URBAN  
DISTRICT.

By DR. T. J. BROWNE.

The town of Clonakilty is situate at the head of Clonakilty Bay, in the Eastern Division of the Barony of East Carberry, Parish of Kilgariff, and County of Cork. The Bay is navigable for vessels of 350 tons as far as Ring, which is about two miles distant from Clonakilty. The principal trade is in corn and farm produce. There is a brewery and two creameries in the town. A weekly market is held; also monthly fairs for sale of cattle, sheep and pigs. Two horse fairs are held annually.

General  
Description

The area of the district is 1,084 acres. The population in 1891 was 3,221, and is a decreasing one. The valuation is £4,952, £3,804 of which is on buildings, and £1,147 on lands. The total indebtedness is £1,300, and the total rate levied amounts to 8s. 3d. in the pound.

There are about six hundred occupied dwellings in the district, about one-half of which are tenanted by the working classes. The houses occupied by the poorer classes are, in many instances, dilapidated and insanitary, having damp earthen floors and not being provided with sufficient air space, lighting or ventilation. The yards are unpaved and undrained, except by surface channels from yard to yard; and are, in some instances, mere cess-pits. There is a general absence of sanitary conveniences in connection with this class of houses, and swine are commonly kept in the yards. The worst localities are Chapel-lane, Lamb-street, Patrick-street, Barrack-street, Barrack-hill, and Fox-bridge. Manure in considerable quantities is kept in most of the yards, and is only removed when required for manuring lands; on these occasions the manure has to be taken through the dwelling-houses, there being in many instances no back entrance to the yards. The better-class houses are, as a rule, provided with sanitary conveniences; the yards are generally paved and drained, but in many instances large accumulations of manure are to be found in these yards.

Dwellings.

The principal water supply of the district is obtained from springs at Scutagh and Gullane. The Scutagh supply is piped direct to the town from the spring, and is unfiltered. The Gullane supply is piped to a small tank and filtered. There are nine public fountains connected with these sources distributed over the town. There are also four public pumps and a few private pumps, the water from which is used by some of the inhabitants. The pipe supply is reported to be sufficient except during periods of long-continued drought. None of the waters have been analyzed for years, but the quality is supposed to be good. One hundred and forty-seven houses in the district are provided with domestic water supplies from the water mains.

Water  
supply.

Sewerage  
and  
drainage.

Most of the principal streets are sewered, the sewers, for the most part, being constructed of rubble masonry, a few only being piped. Some are provided with gully-traps, but open gratings on the sewers is the rule.

The better-class houses and premises have, as a rule, piped connections with the main sewers. None of the poorer-class houses have connections. Some of the old rubble sewers are defectively constructed, and become choked frequently from deposits of solid matter.

The sewerage of the northern portion of the town is discharged on the foreshore at Long-quay, between high and low-water mark. That of the southern portion of the town is discharged into the River Feale at different points of its course through the town. During warm weather, and when the volume of water in the river is reduced, a very offensive odour arises from the river in consequence of the sewage matter flowing into it, and as both sides of the river are thickly populated, the matter is one which calls for prompt remedy.

The sewage from the Convent Schools and Workhouse passes into a stream which flows past several houses. A new sewer discharging into the tide-way is required for the efficient drainage of these places. There is no map of the system of sewers.

The following streets are not sewered, viz.:—Oliver-street, Old and New Chapel-lane, Crowley's-row, Jernyn-street, Lamb-street, School-street, Mill-lane, Bank-street, and Fox-bridge.

Excre-  
ment and  
Refuse  
Disposal.

About fifty houses are provided with water-closets, and the same number with midden privies; in other houses the excrement is disposed of on the manure pits, which are commonly to be found in the yards. The manure is only removed by the occupiers when large quantities accumulate.

The Sanitary Authority do not undertake the domestic scavenging of the district. Refuse is commonly deposited on the streets, and removed with the street sweepings to the manure depôt on the quay. This depôt is fairly well isolated, and the site satisfactory.

Slaughter-  
houses.

There are three slaughter-houses in the town. Two of these are close to dwelling-houses, and one is in a dwelling-house. Only one of the slaughter-houses is fairly constructed and drained. Manure and offal is permitted to accumulate in their vicinity, and cleanliness is not sufficiently observed.

Common  
Lodging-  
houses.

There are about twelve common lodging-houses in the district, none of which are registered; they are not provided with sanitary conveniences, and, for the most part, are unsuitable houses for the purpose.

Dairies,  
Cowsheds  
and Milk-  
shops.

There are a few dairies and cowsheds in the town, but no milk-shops. The dairies are usually in the dwelling-houses. Most of the cowsheds are defectively constructed and badly drained. Manure is permitted to accumulate in their vicinity, and cleanliness is not observed.

Adminis-  
tration.

The Urban District Council meet weekly, but very little public health business is transacted. The sanitary administration is very lax. During the past year the Medical Officer of Health furnished fifteen reports to the Council, on which the necessary orders were made. The Executive Sanitary Officer's report-book is not posted up since July, 1899.

The Sanitary Sub-Officer, Thomas Kingston, discharges his duty in a very unsatisfactory manner. He does not inspect the district carefully, or keep a record of the work which he does.

The Workhouse Fever Hospital, containing twelve beds, is available for the reception of patients suffering from diseases of an infectious nature from the district. There is an ambulance at the hospital, but no disinfecting apparatus. Hospital Accommodation for Infectious Diseases.

The Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890, have not been adopted by the Sanitary Authority.

There are no bye-laws under the Public Health Act in force in the district, and regulations have not been framed under the Dairies, Cow-sheds, and Milk-shops Order.

It will be gathered from what has been stated in the foregoing report that the Urban District of Clonakilty is in a very unsatisfactory sanitary condition. The Sanitary Authority should give the following matters their earnest attention, viz. :—

1. The defective sanitation of the dwellings of the poorer classes.
2. The keeping of swine and other animals on premises so as to cause nuisances.
3. The defective drainage of the yards and premises, and the want of an improved system of sewerage generally.
4. The domestic scavenging of the district and the removal of refuse from premises.
5. The adoption of a code of bye-laws under the Public Health Act, particularly as regards :—Common lodging-houses, slaughter-houses, the keeping of animals on premises, the cleansing of footways and pavements, the removal of house refuse, and the cleansing of privies, ash-pits, and cesspools.
6. The adoption of the Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890, in the Urban District.
7. The framing of regulations respecting dairies, cow-sheds, and milk-shops.
8. The careful and systematic inspection of the district by the Sanitary Sub-Officer.

THOMAS J. BROWNE.

Medical Inspector.

January, 1901.

## COLERAINE.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE COLERAINE URBAN  
DISTRICT.

BY DR. E. COZY BIGGER.

General  
Description.

The Urban District of Coleraine covers an area of 1,011 acres, and is situated on the border of the County of Londonderry, on both sides of the River Bann, about four miles from the sea. Over the river there is a very fine stone bridge connecting the two sides of the town. The western side is called Waterside and Killowen.

Coleraine is a maritime town, its shipping being engaged mostly with cross-channel ports, and in the coasting trade. Coleraine is also a very good market town, being surrounded by a rich agricultural country. The population is chiefly engaged in trade, and in the several spinning, weaving, and shirt factories. There is also a large foundry in the town.

Coleraine is well supplied with public buildings, including about ten churches, a town hall, courthouse, an endowed school, a national model school, and schools erected by the Irish Society, at a cost of upwards of £5,000. The Irish Society has done much for the benefit of Coleraine, including a grant of £38,000 for harbour improvements.

The population, according to the Census of 1891, was 6,845.

The number of inhabited houses is, approximately, 1,664, the density of the population being 4·1 to each house, and 6·7 to each acre; the rateable value, £19,860, and the current rates are 5s. 11d. in the pound, including poor rate, water rate, borough rate, and county charges, also including a navigation rate of 1s. 4½d. in the pound.

The greater portion of the town is on the east side of the river, and is comparatively flat, with an elevation of about 50 feet above sea level; on the western side it ranges from 50 feet to about 200 feet above sea level.

The soil is principally clay, overlying shale and gravel.

The following tables are given with the object of showing the birth rates, death rates from all causes, and the zymotic death rates during the five years, 1896-1900:—

	Birth rates.	Death rates from all causes.	Deaths from the principal zymotic diseases.
1896, ...	... 33·0	17·4	1·2
1897, ...	... 27·3	22·4	1·2
1898, ...	... 28·9	17·8	1·3
1899, ...	... 25·9	23·1	1·5
1900, ...	... 30·7	22·6	0·4



For the purpose of comparing these with the death rates and zymotic death rates of the large centres of population in England and Wales, the following are given :—

Year.	33 GREAT TOWNS.		67 OTHER LARGE TOWNS.	
	Total Death Rate.	Zymotic Death Rate.	Total Death Rate.	Zymotic Death Rate.
1885, . . .	18.9	2.36	17.3	2.22
1887, . . .	19.1	2.27	17.2	2.41
1895, . . .	19.0	2.35	17.2	2.41
1896, . . .	20.2	2.31	18.0	2.45
1899, . . .	19.5	2.50	18.1	2.25

From the foregoing it will be seen that the death rates from all causes are higher in Coleraine than the great towns of England and Wales, and much higher than the 67 other large towns, while the zymotic death rates for Coleraine are very low—much lower than the English towns.

The houses in Coleraine are mostly inhabited by persons of the working class. They are usually one storey high, and built of stone or brick, many of them having only two or three rooms; all are self-contained, there being no tenement houses. In parts of the town the houses are old, dilapidated, damp, deficient in light and ventilation, and many of them are kept in a dirty state. The yards are often unpaved or only partly paved, and are defectively drained. Some dwelling-houses are without back yards, or back doors, or back windows; others have a common yard and a common privy, which serves for several houses. Dwellings

Of the 1,664 houses there are 776 under £4 valuation, 195 between £4 and £6; thus more than half the houses in Coleraine are at or under £6 valuation. Of recent years a number of new houses have been built, containing many modern improvements, including water-closets, baths, well-constructed ashpits. A number of old houses have been altered, and many privies have been replaced by water-closets.

The Sanitary Authority have not erected any houses. The following list gives particulars of some of the worst and most insanitary houses, yards and premises that I have visited :—

Arthur-place.—This is a row of twenty-one slated houses, which have neither back doors nor back windows.

A number of these houses have the privies belonging to the houses in Rosemary-lane up against their back wall. The filth, &c., from these privies percolates about the foundations of the houses in Arthur-place, and there is nothing to prevent foul gas from being given off from the foundations and vitiating the air in these houses. In the middle of this row there is a break, in which there are four filthy wooden privies, and at the upper end of the row there is a dirty wooden privy and defective ashpit. In the roadway in front of this row there are two privies in a filthy condition. This roadway is not properly drained, and on the surface of it there was an accumulation of rubbish, ashes, &c. The sanitary condition and

construction of the houses in this row are so bad that I think it would be almost impossible to make them right. In my opinion, the row should be closed.

14 Blindgate-street.—Thatched house. No windows at the back, nor is there a back door. Yard very dilapidated; no proper privy nor ashpit; no drainage. This house should be put into a proper state.

Killowen-street, East.—Eleven thatched houses adjoining the church wall. These have earthen floors; several are very dilapidated; no privies nor ashpits, no drainage nor paving in the yards, no division between adjoining yards. There is a very steep bank behind this row, so that, in several yards could not be made, nor is there room for privies.

Kyles Bray, East.—Four thatched houses. These have no sanitary arrangements of any sort, nor space to provide same.

Kyles Bray, East.—Six thatched houses, occupied by Concadden, Doherty, Coleman, Hutchinson, Kelly. These have earthen floors; no privies nor ashpits, no drainage; yards require paving.

Long Commons, West side.—Five thatched houses, with defective roofs, dilapidated earthen floors, low ceilings, no back doors, deficient in light and ventilation, wooden privies, common ashpit, not properly constructed.

Long Commons, West side.—Two thatched houses (occupied by Cameron and Montgomery); roof defective and dilapidated; smoke comes through from next house. These houses have earthen floors, lower than the roadway; no drainage, front or rear, wooden privy, no proper ashpit.

Bailing-well-lane.—Thatched house, occupied by James Donnelly; damp earthen floor, no privy, no ashpit, no drainage. Slated house, occupied by Mrs. Wanlock; this has no back door, no privy, no ashpit, no drainage. Two thatched houses, occupied by Doherty and Taylor; these have earthen floors, a dilapidated and defective ashpit, a wooden privy, and their ventilation is defective. Three slated houses; earthen floors, wooden privies, no drainage, yard not paved, ashpit defective. Two slated houses, occupied by M'Laughlin and Martin; very damp, roof defective, earthen floors, no yards, no back doors, no privies, no proper ashpits. Two slated houses—one occupied by Ferguson, the other empty; both are two-storey and well constructed, but without sanitary conveniences of any kind; no drainage. House, occupied by Dooy; well constructed, but damp; no back door, no privy, no proper ashpit, defective drainage. Two houses—one occupied by Roleston, the other empty; earthen floors, no back yards, no privies, no proper ashpit; no drainage in front.

Long Commons, East side.—Occupier M'Crudden. Thatched house, earthen floor, small yard, not properly paved; one cow kept in a small house in the yard—not a suitable place for keeping a cow.

Rosemary-lane.—Three houses, occupied by D. Walls, Mary Jane Walls, Mary Clarke; all dilapidated, damp; no privies, nor ashpits, nor drainage; yards not paved.

Roadways,  
Streets,  
and Pass-  
ages

There are between twelve and fourteen miles of roads, streets and lanes; most of the roads, streets and lanes are macadamized. Some of the laneways and passages are unpaved. Surfaces uneven, without drainage; in others the drainage is defective. Some of them might be kept cleaner; they are often strewn with ashes, vegetable refuse, &c.

The water supply of Coleraine is obtained from springs, which are situated about three or four miles from Coleraine. The water from these springs flows into two reservoirs, one being a service reservoir near the town, the other a new reservoir situated about four miles away. The water appears to be of good quality, but is liable to pollution on account of the ground from which it is obtained being mostly cultivated. Great care appears to be taken so as to prevent pollution.

The capacity of the old reservoir is  $3\frac{1}{2}$  million gallons, the capacity of the new reservoir is 4 million gallons; the minimum and maximum flow into the old reservoir per day of twenty-four hours was 140,000 gallons and 220,000 gallons, respectively.

Average consumption per head per day, for domestic purposes only, is 21 gallons.

Average flow into new reservoir per day of twenty-four hours, 100,000 gallons; 30,000 gallons per day are used for manufacturing and other purposes.

The pressure in the pipes from the old reservoir is 140 feet, and 64 feet of additional head is obtained from the new reservoir.

There is no system of filtration, because it is considered that none is required on account of all the water being obtained direct from springs. As already mentioned, the springs are situated in an agricultural and inhabited district, and, as a consequence, the water is liable to pollution; for this reason it would be safer if the water were efficiently filtered. For a town the size of Coleraine, the water supply is not what should be considered sufficient, the minimum quantity derived from the springs being only slightly in excess of the present consumption, and the storage capacity (apart from the daily yield) is only about six weeks' supply. With the progressive increase in the consumption of water, by the increase in the number of baths, water-closets, &c., the Sanitary Authority of Coleraine will soon require again to be looking out for a further supply.

The water is conveyed from the service reservoir into the town in a 9-inch iron pipe. It is distributed through stand pipes and fountains in the poorer portions of the town, but all the larger houses have a supply direct from the main.

There are upwards of four miles of sewers, mostly trapped by Buchanan's and other disconnecting traps.

The system of sewerage is by gravitation, and consists of main sewers and branches. Seventy per cent. of the sewers are of glazed fire-clay pipes, the remaining 30 per cent are stone-built sewers; these are being gradually overhauled. The sewage is discharged into the river through four main outfalls, and several small independent outfalls. There is no system of purification, most of the sewage discharges directly into the river at all times, as the new outfall is the only one controlled by a tidal flap valve. The new sewers are ventilated through the manholes, which are level with the surface of the roadways, and are from 50 to 100 yards apart; in the more recently constructed sewers, the practice has been to insert charcoal ventilating pans to the manhole covers.

The house connections are constructed of earthenware pipes, mostly properly trapped, and many are properly ventilated with pipes, which run above the edge of the roof.

Many of the smaller houses have no drains. Slops, &c., are thrown on to the ground sometimes in front of the houses, and at other times on to the surface of the yard.

Disposal  
and  
Removal  
of Excre-  
ment and  
House  
Refuse.

The sewerage system, on the whole, appears satisfactory, except in connection with the smaller houses, where the drains are frequently defective, if not entirely absent.

The majority of the houses in Coleraine have only the privy midden, but the larger and more recently-built houses have water-closets.

The privy middens are faulty in construction. Some are made of wood; the floor or sides of the middens are rarely concreted. In many instances, there is only one privy for several houses. They are frequently kept in a filthy condition, and are a source of danger to the public health.

The middens and cesspits should be concreted at the bottom and sides, so as to prevent pollution of the sub-soil.

The domestic scavenging is undertaken by the Sanitary Authority, free of cost to the householders, who have only to make application to the Executive Sanitary Officer or to the Sanitary Sub-Officer. The Scavenging staff consists of four men.

Manure  
Depot.

There is one large enclosed manure dépôt adjoining the harbour, from which manure is sold to the farmers.

Dairies,  
Cowsheds,  
and Milk-  
shops.

These are not registered, although the Urban Council have made regulations with respect to them.

There are thirty-five cowsheds and dairies, and two milk-shops. The dairies are not much used for the purpose of storing milk, the milk being distributed as soon as possible after the cows are milked. A large proportion of the milk sold in the town is brought into it from outside dairies.

Some of the cowsheds are situated in small confined yards, their construction being defective. Frequently there is not the proper allowance of cubic space; in many instances the drainage is defective, nor is cleanliness scrupulously observed. Manure heaps are frequently too close to the cowsheds.

Common  
Lodging-  
houses.

There are only two milk-shops; these are in small groceries.

The Sanitary Authority have made bye-laws, and they also keep a register. There are five common lodging-houses, which are regularly inspected.

Bake-  
houses.

These are mostly steam bakeries, and are kept clean and in good order.

Slaughter-  
houses.

There are a number of slaughter-houses, some of which are not properly constructed, nor properly drained, nor have they suitable arrangements for killing or dressing the meat. The Sanitary Sub-Officer inspects them regularly, and pays particular attention to seeing that they are kept clean. The Sanitary Authority might consider the advisability of erecting a public abattoir.

The Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890, have both been recently adopted, and it is too soon yet to see any result from their introduction.

The Coleraine Urban Sanitary Authority consists of all the members of the District Council, which number eighteen. They meet monthly, when attention is paid to the reports of the Medical Officer of Health and Sanitary Sub-Officer.

Sanitary  
Staff.

Dr. Greery, Medical Officer of Health.

William Eccles, Esq., Executive Sanitary Officer.

Thomas C. Lynd, Sanitary Sub-Officer.

Hospital accommodation for cases of infectious disease is provided by the Union Fever Hospital, which is situated about half a mile from the centre of the town. There is no modern disinfecting apparatus. Coleraine being a seaport town of some importance, the taxation of which is comparatively light, the Sanitary Authority should have no hesitation in procuring a modern steam disinfecting apparatus.

The following have been adopted:—

Adoptive  
Acts.

The Infectious Disease (Notification) Act, 1889.

The Infectious Disease (Prevention) Act, 1890.

The Housing of the Working Classes (Ireland) Act, Part 3.

Bye-laws and regulations are in force for the regulation of the Bye-laws following:—

1. The removal of house refuse.
2. The cleansing of privies, ashpits, and cesspools.
3. For the prevention of nuisances arising from filth, dust, ashes, rubbish, and the keeping of animals.
4. New streets and buildings.
5. Dairies, cow-sheds, and milk-shops.
6. Common lodging-houses.

The Urban District Council light the district with gas, which is Public supplied from their gas-works. Lighting.

The following is a portion of the work performed:—

The Medical Officer of Health made fifty-two reports during the year 1900. Sanitary Work performed in the year 1900.

Number of sanitary notices served in 1900:—75.

Number of prosecutions ordered:—13.

Number of owners threatened with closing orders:—6. (In five of these cases the premises were either vacated or repaired; the sixth was placed in the solicitor's hands.)

A fair number of water-closets were erected, drains made, ashpits and privies repaired.

The Sanitary Authority might be recommended to give the following their careful consideration:—

The owners of the insanitary houses and yards already mentioned should be served with notices requiring them to put those that are capable of being made sanitary into a sanitary condition, and the owners of those that are unfit for human habitation should be ordered to close them. Recommendations.

The dilapidated and defective privies and ashpits should be repaired, the floors and sides concreted to prevent pollution of the sub-soil, and, where there is not a separate privy to each house, such should be provided.

Seeing the large number of houses that are not in a sanitary condition (and many of which cannot be made sanitary), it would be

advisable for the Urban District Council to erect a number of houses under the provisions of the Housing of the Working Classes Acts. If such were erected they would serve as model sanitary dwellings at a reasonable rent, and this would have a tendency to make the owners of the other houses keep them in better repair, and in a more sanitary condition.

Lanes, passages, and small yards should be channelled, drained, paved, &c. The erection of a public abattoir and providing a modern steam disinfecting apparatus have already been advised. The bye-laws should be more rigidly enforced.

I have to thank the Medical Officer of Health, Dr. Creery, the Borough Surveyor, the Executive Sanitary Officer, and the Sanitary Sub-Officer, for their valuable assistance during my inspection.

E. COEY BIGGER,  
Medical Inspector.

July, 1901.

---

## DALKEY.

## REPORT ON THE SANITARY CIRCUMSTANCES AND ADMINISTRATION OF THE DALKEY URBAN DISTRICT.

By DR. T. J. BROWNE.

Dalkey Urban District is situate on the southern shore of Dublin Bay, about seven miles distant from Dublin. The entire district is in the Union of Rathdown, and comprises an area of 592 statute acres. The population in 1891 was 3,197, and the rateable valuation of the property is £15,430. Dalkey is a favourite seaside resort, and during the summer months there is a large number of visitors.

The district is largely a residential one, the poorer class forming only a small proportion of the population.

There are 817 occupied houses in the district, and about 150 of these are tenanted by the working classes. There are no industries in the district.

The great majority of the houses are of the better class, and are well circumstanced as regards drainage, water supply, and sanitation generally.

The poorer class of houses, which number about 150, are situate in lane-ways off the principal streets. They are one-storey buildings, with two apartments, as a rule, in each, and are of a very poor class. Overcrowding is general, one water-closet or privy midden serves, as a rule for all the houses in each lane-way. These are generally close to the houses, and in a very filthy state. The yards are unpaved and badly drained, and usually very dirty, human excrement and filth of all kinds being scattered on the surface. There are piggeries in many of the yards. These are, for the most part, close to the dwellings, in a very filthy state, badly drained, and giving rise to nuisances of the worst form. They do not, with few exceptions, conform to the bye-laws.

The Sanitary Authority have not provided any dwellings for the working classes, although such are much required. I understand it is in contemplation to erect fourteen dwellings under the provisions of the Housing of the Working Classes Act, but this number will be quite insufficient to meet the requirements of the district. Some houses have recently been closed owing to their being declared unfit for habitation, and several other houses would be dealt with similarly, but for the want of housing accommodation for the tenants who would be displaced.

The water supply of the district is obtained from the Vartry source, and is supplied by the Dublin Corporation at a charge of 4d. in the pound on the valuation of the district. Twenty gallons per head per day is the quantity contracted for. The annual cost amounts to £480. The revenue from water rents is about £160 per annum.

The water mains are laid through all the principal streets and roads. All the better-class houses have domestic supplies, and the poorer-class are supplied from ten public fountains, distributed through the district.

General  
Description.Dwelling  
Accommodation.Water  
Supply.

The water has to be pumped to a reservoir to supply sixty-three houses situate on the high level. The pumping is done at night, and whilst this is in progress, the water supply of the lower level is cut off so as to allow of the water in the mains rising to the level of the pumping station. The supply is in consequence intermittent, and, in case of fire occurring in the night-time, there is no means of extinguishing it.

Sewerage  
and Drain-  
age.

The principal thoroughfares and all the lower level portions of the district are sewered. The sewers are constructed of glazed earthenware pipes, properly laid and jointed, with the exception of about half a mile of the main sewer, which is built of brick. All the sewers are trapped and ventilated. The sewage is conveyed to two outfalls, one at Bullock Harbour and the other at Coliemore Harbour, and discharged into deep water at these places.

The house connections are formed of six and four-inch pipes, which are properly trapped and ventilated, and, in many instances, smoke-tested. Some houses, about twelve in number, situate in isolated positions, are drained into cesspits, but as to the construction of these cesspits no information was forthcoming.

Since the introduction of the present system of main drainage in the district, about five years ago, enteric fever, which was formerly rather prevalent, has almost disappeared.

The domestic scavenging is not undertaken by the Sanitary Authority. In the case of the better-class houses, the occupiers are responsible for the removal of refuse from their premises; the owners in the case of the poorer houses.

The excrement is nearly all disposed of on the water-carriage system. About fifty houses have midden privies, which are cleaned out about four times in the year. Ashpits are emptied when full, and the contents removed to the manure dépôt at rear of the Town Hall, which is near to the centre of the town. About once yearly the accumulated refuse and ashes is sold and removed.

Excre-  
ment and  
Refuse  
Disposal.

The domestic scavenging is carried out in a very unsatisfactory manner, and should be undertaken by the Sanitary Authority.

The roads in the district are under the control of the Council, and, as a rule, are badly kept. Refuse and filth of every kind is deposited on the laneways and vacant spaces throughout the district.

Slaughter-  
houses.

There are four registered slaughter-houses in the district, all of which are situate close to dwelling-houses. With one exception, the construction and drainage of these slaughter-houses is defective—piggeries, manure heaps, and offal are to be found in close proximity to three of them, and none of the premises can be considered as suitable for the purpose.

Common  
Lodging-  
houses.

There are no common lodging-houses in the district, and only two tenement houses, which are fairly well kept.

Dairies,  
Cow sheds,  
and Milk-  
shops.

Regulations respecting dairies, cow-sheds, and milk-shops are in force in the district. There are seventeen registered cow-sheds in the district. They are nearly all close to dwelling-houses, in close-confined yards, with piggeries and manure heaps in close proximity. Many of the sheds are defectively constructed, badly ventilated and drained. There are no dairies, properly speaking, in the district, all milk being sent direct to the customers.

The milk-shops are kept clean, and in separate apartments from the dwelling-houses.

Bake-  
houses.

There are two bake-houses in the district. Both are structurally good, and well kept.



The Council of Dalkey Urban District meet regularly each fortnight. Orders are made on the reports of the Medical Officer of Health and Sanitary Sub-Officer.

Mr. J. P. Gahan, Executive Sanitary Officer.

Dr. Mayne, Consulting Sanitary Officer.

Dr. Wright, Medical Officer of Health.

S. R. Góing, Esq., c.s., Surveyor.

Mr. Hanlon, Sanitary Sub-Officer and Rate Collector.

Sanitary  
Adminis-  
tration.

Sanitary  
Staff.

The Medical Officer of Health and Sanitary Sub-Officer furnish reports to the Sanitary Authority. The latter officer does not devote his whole time to the performance of the duties of Sanitary Sub-Officer, for which office he is paid £15 per annum. During the past twelve months he furnished seventy-one reports to the Sanitary Authority. A similar number of notices were served for the abatement of nuisances, all of which were complied with.

There is no hospital for infectious diseases in the district. Patients suffering from such diseases are usually sent to the Union Fever Hospital at Loughlinstown. The Sanitary Authority is not provided with an ambulance for the conveyance of patients suffering from infectious disease to hospital, nor have they a disinfecting apparatus. The Workhouse ambulance and disinfecting apparatus are utilised when required. Infected houses are fumigated with sulphur, and lime-washed, under the supervision of the Sanitary Sub-Officer.

Hospital  
Accommo-  
dation, &c.

The Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890, have not been adopted in the district.

Bye-laws relating to the following matters have been adopted:—

- (1.) Cleansing of footways, &c.
- (2.) Removal of refuse.
- (3.) Nuisances, keeping of swine, &c.
- (4.) New buildings.

The bye-laws are not enforced. Regulations respecting dairies, cow-sheds, and milk-shops have been adopted, but are not enforced.

Bye-laws  
and Regu-  
lations  
in Force.

The township is lighted by gas under contract with the Gas Company.

The matters which demand the early attention of the Sanitary Authority are as follows:—

Recom-  
menda-  
tions.

- (1.) The provision of healthy dwellings for the working classes, and the closure of unhealthy dwellings.
- (2.) The undertaking of the domestic scavenging of the district.
- (3.) The abolition of privy middens, and the substitution of the water-closet or pail system.
- (4.) The enforcement of the bye-laws, particularly as regards the keeping of animals on premises.
- (5.) The enforcement of the regulations respecting the management of dairies, cow-sheds, and milk-shops.
- (6.) The adoption of the Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890.
- (7.) The selection of a suitable site for the manure dépôt, or the provision of a refuse destructor.
- (8.) An improved system of scavenging.
- (9.) More careful inspection of the district for the purpose of the detection and abatement of nuisances.

THOMAS J. BROWNE,  
Medical Inspector.

December, 1900.

## DROGHEDA.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE DROGHEDA URBAN  
DISTRICT.

BY DR. EDGAR FLINN.

Brief  
Municipal  
History.

The Municipal Borough of Drogheda had, at the Census of 1891, a population of 13,708. The area of the borough has since been extended by the Drogheda Corporation Act (1896), and the population is now locally estimated at slightly over 13,000.\*

During the year 1900 the birth-rate was 21·9, the death-rate from all causes 23·4, and the death-rate from the principal zymotic diseases 1·9 per 1,000 of the population.

The town is built on the River Boyne, and the greater portion of it is situated on the northern banks of that river in the County of Louth, the smaller portion being in the County of Meath.

The population is largely composed of the working classes, who are employed in connection with the various factories in the town.

There are four weaving factories, manufacturing various kinds of linen and cotton goods, viz. :—

The Drogheda Manufacturing Company, Limited.  
St. Mary's Weaving Company.  
The Boyne Weaving Company.  
Robert Usher and Company.

There are also two breweries of considerable size, viz., the Castle-bellingham and Drogheda Brewery Company, and Casey's Brewery Company, Limited. There are also several malt-houses and an extensive manufactory of chemical manures.

The Urban District Council meet weekly.

The Corporation consists of six Aldermen and eighteen Town Councillors, elected from three Wards, viz., Fairgate Ward, Laurencegate Ward, and Westgate Ward. The Waterworks and Gasworks are now the property of the Corporation, and were purchased at a cost of £19,872 and £21,000, respectively, from private companies.

The valuation of rateable property in the Urban District is £24,045, and the area comprises 1,505 acres.

The number of inhabited houses is estimated at 2,765.

The common lodging-houses number fifty-five. There are seventy-three registered cow-sheds and dairy-yards, eleven slaughter-houses, and twelve bakeries.

The Corporation of Drogheda has an income of about £5,700 a year, derived in part from rentals and house property, markets and tolls, dog tax, car licences, &c., &c., and a considerable income derived from weekly tenancies, which is included in the above total.

Geological  
Pos-  
ition.

Drogheda is situated on the carboniferous limestone, the beds of which are disposed in a shallow synclinal basin, resting on Silurian rocks, which rise from beneath it at one and a half miles to the north and three miles to the south of the town. The rocks are, for the most part, covered by a thick mantle of superficial deposits, chiefly clay and limestone gravel.

\* Population according to the Census of 1901 is 12,768.

The Sanitary Staff consists of:—

Sanitary  
staff.

- 1 Superintendent Medical Officer of Health—Dr. W. Bradley.  
 Medical Officers of Health—Dr. J. B. Kelly, Dr. J. V. Byrne,  
 Dr. G. Hamill.  
 Executive Sanitary Officer (who is also the Borough Surveyor)—  
 Mr. N. Hatch.  
 Sanitary Sub-Officer—Mr. P. Weldon.

This latter officer also discharges the duties of Inspector of Cow-sheds, Dairies and Milk-shops, Clerk of the Public Markets, Collector of Rents, and Inspector under the Food and Drugs Act.

- Drogheda Corporation Act, 1896, relating to extension of muni-  
 cipal area, acquisition of Waterworks, &c. Local Ac'ts  
 of Parlia-  
 ment.  
 Drogheda Corporation Gas Act, 1898, relating to purchase of  
 Gasworks.

A considerable proportion of the dwelling-houses in the town, prin-  
 cipally those occupied by the poorer classes, are to be found, in many  
 instances, huddled on small areas, and devoid of proper sanitary  
 accommodation. In many cases, the houses are unfit for human  
 habitation, and are in bad repair. The unhealthiness produced by  
 the crowding together of insanitary dwellings is further aggravated  
 by the overcrowding of persons, many of these wretched dwellings  
 being occupied by families averaging from five to nine persons, and  
 often more. In some places, such as Emerson's-court and Warren's-  
 court, the houses are built back to back. A considerable number of  
 dwellings contain but one room, and in the houses that possess two  
 rooms, the sleeping apartment is usually very small, dark, and ill-  
 ventilated. The average weekly rental is about 1s. 2d.

Dwelling  
accommo-  
dation.

The Hous-  
ing of the  
working  
classes.

A large number of the poorer class of houses are without any  
 back-yard accommodation. Those that I specially noted were situate  
 in Harrison's-court, Sandy-row, Fairclough's-court, Sunday's-gate,  
 Murphy's-court, Chord-road (several houses), &c.

The Corporation derives a large revenue from house property  
 situated in some of the most insanitary areas in the town. The class  
 of house property referred to is principally situated in Bredin-street,  
 Hand-street, Patrick-street, Scarlet-street, Rope-walk, Green-lanes,  
 Dulock-street, Beanmore-road, Charles-lane, Windmill-lane, North-  
 road, George's-street, Patrick-street. The tenancies in some of these  
 localities are held weekly, and in others they are held on lease. Other  
 insanitary areas that may be noted are Upper Magdalen-street,  
 Copper-alley, Ulster-lane, Scotch-hall, The Marsh, The Dale, some  
 houses on Platten-road, &c.

The conditions that apply generally to the houses of the labouring  
 classes are the following:—For the most part they are one-storeyed  
 thatched houses, with earthen floors, and, in the majority of in-  
 stances, damp and dilapidated. In some houses there are two small  
 rooms badly ventilated, and a considerable number without privy or  
 ashpit accommodation, while the windows are frequently very small,  
 and can only be opened to a trifling extent. The back yards (small  
 and confined in many cases, and others without any) are permitted  
 to remain in a filthy state. Objectionable refuse is cast on the yards.  
 Surface pools of stagnant water, collections of manure, vegetable  
 and ash refuse also abound in the rear of many of these small cot-  
 tages. The roofs also of many of these cottages are not thoroughly  
 rain-proof.

During the year 1900 an outbreak of typhus fever occurred, which caused thirteen or more deaths. This outbreak had its origin in one of the most insanitary areas in the town, viz., the Rope-walk and Magdalen-street. In the Rope-walk twelve cases occurred, five of them proving fatal. The majority of the houses in the Rope-walk are utterly unfit for human habitation, and many of them are overcrowded. An Artisans' Dwellings' Scheme, which proposed to erect dwellings in various parts of the town, was initiated some time ago, but, for some unexplained cause, it has remained in abeyance, and has not been proceeded with. There is probably no town in my district which stands more in urgent need of such a scheme than Drogheda, and the Council should, at the earliest possible moment, take this vitally-important matter into consideration, affecting, as it does the health and well-being of a large proportion of the population. The following extract from the report of one of the Medical Officers of Health (Dr. Bellew Kelly), as far back as the year 1879, shows that even then the better housing of the labouring classes was recognised as a pressing question. Referring to his district (which comprised a most important and congested area in Drogheda), he reported "that it is not possible that my district will ever be in the sanitary condition that it ought to be so long as the present system of housing the poor is allowed to exist, viz., giving them wretched, ill-ventilated hovels or rooms to live in, and charging them exorbitant rents in comparison to the accommodation supplied." It is obvious that one of the most urgent problems to be dealt with in Drogheda is the clearance of insanitary areas, and the better housing of the labouring classes.

The following table shows the number of typhus fever cases in the Drogheda Urban District during the year, 1900:—

Localities.	Number of Cases.	Number of Deaths.	Localities.	Number of Cases.	Number of Deaths.
Rope-walk, . .	12	5	Scarlet-street, .	1	NIL
Hardman's-garden, .	8	1	Trinity-street, .	1	"
Patrick-street, .	2	1	West-street, .	1	"
Peter's-hill, . .	2	1	Bredkin-street, .	1	"
Nun's-walk, . .	1	1	Green-lanes, .	1	"
Cherry Mount, .	1	1	Battle-lane, . .	1	"
Railway-terrace, .	1	1	North-quay, .	1	"
Marsh-road, . .	1	1	Hand-street, .	1	"
Magdalen-street, .	2	NIL	Warren's-court, .	1	"
Cooling-street, .	2	"	Total, . .	41	12

It was remarkable that the outbreak of typhus fever mentioned above had its habitat principally in the insanitary areas referred to before. The disease, it is supposed, was imported, in the first instance, into the town by a sailor. In the Rope-walk locality it had a fertile breeding-ground, and the principal places attacked were the Rope-walk (12 cases), Hardman's-garden, a badly-drained area (6 cases), Patrick-street (2), Magdalen-street (2), Nun's-walk (1), Peter's

hill (2), Scarlet-street (2), Warren's-court (1), Hand-street (1), Bredin-street (1)—altogether there were forty-one cases and twelve deaths. Overcrowding and filth and the holding of a wake, in the first instance, contributed to the spread of the disease. Active-preventive measures were carried out, but, in some cases, the reluctance to go to hospital prevented medical assistance being called in early enough, and the disease obtained a foothold in one or two localities in consequence. Section 141 of the Public Health Act was, I understand, resorted to in one or two cases. Quite recently some fresh cases of the disease occurred again; they were promptly isolated and removed to hospital. The recrudescence of the disease occurred in the insani-  
sanitary areas previously attacked.

In 1863 the Drogheda Waterworks Company obtained an Act of Parliament for the construction of works to supply the town of Drogheda with water. These works were duly carried out, and the Waterworks Company supplied the town until 1898, when the Corporation obtained powers by the Drogheda Act, 1896, and acquired possession, and since 1898 are the owners in virtue of the said Act, and now supply the town.

The water supply is obtained from a considerable stream, called "the Slate-hill Brook," which drains a catchment area of about 670 acres. This catchment area is about 350 feet above the level of the town. The water is impounded in two reservoirs, one at Killineer, and a second at Rosehall. The storage capacity of the former when full is 22,000,000 gallons, and that of the latter, 5,000,000 gallons. The Rosehall service reservoir is about one mile distant from Drogheda, and is about 140 feet above the lowest level of the town. Hitherto the water supply has been unfiltered, but filter-beds are now in process of construction. These will be three in number, and will each measure 90 feet in length, by 60 feet in width, and 8 feet in depth. It is also in contemplation to increase the present supply by either providing an additional reservoir, and impounding the water from the Slate-hill Brook at a point higher up than at present, deepening the existing Killineer reservoir, which would afford a supply of further storage of 15,000,000 gallons of water.

The supply of drinking water per head per diem averages twenty-three gallons. In consequence of the increase of the area of consumption, the supply of water is considered inadequate (and rightly so) for all the wants (manufacturing and otherwise) of the town; hence the idea has suggested itself of increasing the sources of supply. The proposed additional storage reservoir at Barnattin, it is estimated, would contain 50,000,000 gallons, and this addition would be ample for the requirements of the town.

The following townlands, or portions thereof, are included in the catchment area:—

Balgatherin.  
Killineer.  
Tullyesker.  
Coolfora.

There are ten inhabited houses within this area, and it is practically altogether composed of pasture lands. There are one or two

small tributary streams that feed the Slade-hill Brook, and also contribute to the sources of supply.

The number of consumers in the Urban District that avail of the water supply is 1,102, and the gross receipts of water rates for fourteen months, ending September 30th, 1900, was £2,071 10s. 11d.

Subjoined are the most recent analyses of the water taken from both reservoirs, as also an analysis of water taken from three public fountains in Drogheda. The necessity for a filtration of this water supply is very obvious, and it should be carried out with as little delay as possible:—

11th August, 1897.

Composition of two specimens of water submitted to me for the purpose of analysis by Drogheda Corporation:—

One Imperial Gallon (70,000 grains) contains in grains:—

	Marked.	
	Killmeor Reservoir.	Rosehall Reservoir.
Colour looked at through a tube two feet long.	Yellow	Yellow
Total solid matters, . . . . .	11200	11200
Including:—		
Albuminoid Ammonia, . . . . .	0.012	0.012
Saline Ammonia, . . . . .	0.000	0.000
Nitrous Acid, . . . . .	None	None
Nitric Acid, . . . . .	Trace	1230
Chlorine, . . . . .	1430	1630
Equal to Sodium Chloride, . . . . .	2450	2620
Sulphuric Acid, . . . . .	Trace	None
Equal to Calcium Sulphate, . . . . .	Trace	None
Phosphoric Acid, . . . . .	None	None
Hardness, . . . . .	6°	6°
Suspended Particles, . . . . .	Few	Few
Turbidity, . . . . .	None	None
Sediment, . . . . .	Slight	Slight
Sugar Test, . . . . .	Satisfactory	Satisfactory

*Microscopic Examination:*—A large number of micro-organisms present; these waters belong to the peaty class; they are not first-class waters, but are usable.

CHARLES A. CAMERON.

5th August, 1896.

Composition of three specimens of water submitted to me for analysis by Drogheda Corporation:—

One Imperial Gallon (70,000 grains) contains in grains:—

—	Marked 3.	Marked 6.	Marked 7.
Colour, looked at through a tube two feet long.	Yellow.	Deep yellow.	Deep yellow.
Odour at 50° F.	Slight.	Nothing peculiar.	Nothing peculiar.
Total solid matters.	7000	6250	7700
Including—			
Albuminoid Ammonia.	0018	0025	0020
Saline Ammonia.	0001	0001	0002
Nitrous Acid.	None.	None.	None.
Nitric Acid.	Traces.	Traces.	Traces.
Chlorine.	1481	1491	1481
Equal to Sodium Chloride.	2457	2457	2457
Sulphuric Acid.	Traces.	Traces.	Traces.
Equal to Calcium Sulphate.	"	"	"
Phosphoric Acid.	"	"	"
Hardness.	29°	28°	3°
Sugar test.	Good.	Not very good.	Fairly good.

In Nos. 3, 6, and 7 the amount of albuminoid matter is excessive, but it seems to be derived chiefly, or almost wholly, from comparatively innocuous peaty matter. The waters deposit rather large sediments, which prove that they have not been properly filtered. Having regard to their deep yellow colour, their turbidity and excessive ammonia, I must pronounce them to be second-rate waters.

C. A. CAMERON.

The latter Table relates to an analysis of water taken from the public fountains supplied by the Drogheda Waterworks in the town at three different levels.

The greater portion of the sewage of the town is conducted through <sup>Sewerage</sup> fire-clay, glazed and socketed pipes; these sewers are furnished with <sup>system.</sup> manholes and inspection chambers. A comparatively small portion of the town, the Borough Surveyor states, is furnished with rubble-built sewers, and the majority of these convey surface drainage only. All the principal streets and thoroughfares are provided with pipe sewers, properly laid and jointed, and I am informed that the house drainage connections are also properly laid.

Manholes are placed at every change of gradient, and at all junctions of streets. These manholes measure 6 feet by 3 feet, and are also used as flushing tanks when required. The flushing of the sewers is carried out at intervals, and when water can be spared from the public supply; hence the cleansing and flushing process is to an extent limited. When the supply is augmented by the additional storage reservoir, proposed to be erected, more frequent flushing of the sewers will, no doubt, be carried out. A number of the manholes were, at my request, opened, and the condition of the sewers found generally to be satisfactory. There was practically little or

no smell from the open manholes I examined, and very little deposit of sewage matter lay in the sewers. The ventilation of the sewers is carried out by cast-iron shafts erected against houses, and reaching to above their summit; there are a considerable number of these ventilators—it is stated, nearly 100. It is not exactly known whether they are all directly connected with the sewer-pipes. It is computed that there are about ten statute miles of sewers in the town.

There are fourteen outfalls on either side of the River Boyne—nine on the north side and five on the south side of the river. The crude sewage of the town discharges directly into the river at these various points, and this is most objectionable, and, at certain seasons of the year, must constitute a grave nuisance.

In a town of the importance of Drogheda there should be a map showing the entire system of sewerage, as well as the house drainage connections, and it would be very necessary and advisable if steps were taken to provide the outlying portion of the town, requiring it, with a system of sewerage. The Council should approach the consideration of the question at an early date.

The foot pavements in all the principal thoroughfares have been concreted at a cost of £3,000. This municipal improvement is of undoubted value, and is a marked permanent benefit.

Removal  
of excreta.

The removal of excreta is carried out both by the midden and water-carriage system. In some of the poorer districts there is very little privy accommodation, and, in one or two instances, one privy was used in common by occupants of ten cottages. Where there is no privy and ash-pit accommodation, the roadway is used for the deposit of filth, and the introduction of the "pail system" would do much to improve the sanitary condition of this class of dwellings.

Public and  
domestic  
cleansing.

A system of domestic cleansing of ash-pits and middens is undertaken by the Urban Council free of expense to the householders. This system is carried out, I understand, with regularity, and one horse and cart with two attendants specially discharge this duty.

The Borough Scavenging Staff consists of about twenty permanent labourers, this number being occasionally increased during the winter months, and when found to be necessary.

The public cleansing of the town might be much improved, more particularly as regards the laneways and smaller thoroughfares, and those areas inhabited by the poorer classes. In these localities more frequent scavenging and cleansing is most necessary, as refuse matter, both vegetable and organic, is thrown on to the roadway, and allowed to remain there for much too long a period. Daily scavenging of such places would be very desirable. The principal thoroughfares and streets are at present well scavenged. The Corporation deserves credit for adopting a system of domestic cleansing, but, if it is to be of use, more frequent and systematic removal of refuse and filth from back yards and premises, inhabited by the poorer classes, will be necessary, and an additional horse and cart with attendants might, with advantage, be employed.

Cow-sheds  
and  
dairies.

There are about sixty-four cow-sheds and dairies within the Urban District, and they are subject to regulations made by the Council under the Dairies, Cow-sheds, and Milk-shops' Order, 1879.

In the majority of the cow-sheds the regulations as to ventilation and cubic space are not carried out, and, in some instances, the cow-byres contained too many cows. The superstition that a cow, kept in a foul and close atmosphere, and in the dark, is a "better milker"



is believed by many cow-keepers here. The danger incurred by persons who consume milk from cows so kept is obvious, but it is apparently unheeded. Many of the cow-sheds and dairy-yards are very badly paved, and permit of the saturation of the soil by the drainage, &c., of the byres. In a few instances pigs are kept in the dairy-yards, and in many there is an absence of a proper water supply. The question of the ventilation and overcrowding of some of the cow-sheds is of great importance, and the Council should take care that the regulations are rigidly adhered to in this regard. The keeping of pigs should also be strictly prohibited, and the more frequent removal of manure should be enforced. In one or two instances, the cow-sheds are much too near dwelling-houses, and this should also not be allowed.

There are eleven slaughter-houses in the Drogheda Urban District, all of these being practically situated in populous localities, and in the vicinity of inhabited dwellings. As a rule, the slaughter-houses are fairly well kept, and the drainage, ventilation, and floor surface in most instances satisfactory. A code of bye-laws is about being adopted in connection with the slaughter-houses, which, I have no doubt, will further tend to improve them. A town of the size of Drogheda should be provided with a public abattoir, as the slaughtering of cattle in the immediate neighbourhood of dwelling-houses is not conducive to the public health.

The bake-houses, which are twelve in number, are, as a rule, cleanly and well kept.

There are fifty-five common lodging-houses, which are regularly inspected; they are registered, but are not at present governed by any bye-laws. Those that I saw, with the Inspector, were, at the time of my visit, clean and well kept. There are, however, no notice-boards, showing the words, "Registered Common Lodging-Houses," which the local Authority should require to be shown under Section 90 of the Public Health (Ireland) Act, 1878.

A code of bye-laws, regulating (1) the cleansing of footways and pavements, (2) slaughter-houses; (3) keeping of animals, (4) nuisances, (5) common lodging-houses, (6) new streets and new buildings, has been under consideration for a very prolonged period by the Urban Council. Very recently these bye-laws have been finally submitted, and have been, I understand, approved of by the Council. I have no doubt that these bye-laws, when in force, will have a very beneficial effect on the sanitary condition of the town.

The public lighting of the town is carried out by the Corporation. The Gasworks and supply was acquired by Act of Parliament in 1898.

There is no disinfecting apparatus. The provision of one would be desirable in Drogheda.

The Infectious Disease (Notification) Act, 1889, has been adopted in the Urban District. There is no hospital for infectious disease, but the Fever Hospital at the Union is availed of in all cases.

### RECOMMENDATIONS.

There is no problem in Drogheda that requires the close and sustained attention of the Council more than the housing of the working and labouring classes, as a grave danger to the public health exists from the manner in which a large number of these classes are at present housed. The Council should not further delay in taking the question into consideration.

Water  
supply.

The Council should also use every means in its power to expedite and finish the construction of the filter-beds; the water supply requires to be filtered, and the most recent analysis shows that it will be much improved by a proper system of filtration.

Public  
cleansing  
and  
Domestic  
scaveng-  
ing.

The public cleansing and scavenging of the smaller thoroughfares and laneways in the poorer and congested areas of the town should be carried out daily, or at least every second day. It is in localities such as these that epidemics of infectious disease most frequently have their origin, and that filth removal is most necessary. The cleansing of middens and small hack yards should also be more frequently carried out, and manure accumulation should not be permitted in these places.

Cowsheds  
and  
dairies.  
Disinfect-  
ing  
apparatus.  
Unhealthy  
areas.

The regulations in regard to cow-sheds and dairies should be more strictly enforced in every particular.

The question of providing a disinfecting apparatus should also be considered by the Council.

The clearance of the most unhealthy and overcrowded areas is a matter that must, sooner or later, engage the attention of the Council, but it will be necessary to make provision and provide adequate accommodation for the persons inhabiting those areas, and who would be so displaced. The "housing problem" is the question to be grappled with, and the one most urgently requiring attention. The Council might consider the question of providing more manual and horse labour for the better carrying-out of the system of domestic scavenging. I have to express my thanks to the Medical Officers and the other Sanitary Officers for the assistance and information afforded me during the course of my inquiries.

D. EDGAR FLINN,

Medical Inspector.

February, 1901.

## DUNDALK.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE DUNDALK URBAN  
DISTRICT.

By DR. D. EDGAR FLINN.

The Dundalk Urban District Council consists of eighteen members, <sup>Brief</sup> and the town is divided into four Wards, viz.:—Middle Ward, North <sup>sanitary</sup> Ward, South Ward, and Seatown Ward. <sup>history</sup>

The Dundalk Urban District has, according to the last Census (1891), a population of 12,449.\*

During the year 1900 the birth-rate was 24·9, the death-rate from all causes 18·2, and the death-rate from the principal zymotic diseases 0·6 per 1,000 of the population.

The area of the district is 3,174 acres; number of inhabited houses, 2,523. The ratesable value amounts to £28,973 17s.

Provisional Orders were obtained at various intervals for the following objects:—

Dundalk Waterworks, . . . . .	1884
Dundalk Joint Burial Board, . . . . .	1891
Dundalk Electric Lighting Order, . . . . .	1897

The Waterworks were opened in March, 1886.

The municipal rates levied on the Urban District for the past two years were as follows:—

	s.	d.
1899.—Municipal Rates, . . . . .	6	2
" Poor Rate, . . . . .	2	0
Total, . . . . .	8	2 in the £.
1900.—Municipal Rates, . . . . .	6	0
" Poor Rate, . . . . .	3	4
Total, . . . . .	9	4 in the £.

There is a large working-class population in Dundalk, which, of late years, has considerably increased, the locomotive works of the Great Northern Railway Company, now established at Dundalk, affording employment to large numbers. In addition to this there are several factories, two breweries and a distillery, as well as a variety of minor works. Thus it is to be expected that the wage-earning portion of the community should constitute a large percentage of the inhabitants of the town.

The principal geological feature about Dundalk is the remarkable <sup>Geological</sup> plain on which the town is situated. This great flat extends from <sup>formation.</sup> the road at the base of the Carlingford Mountains, north of Dundalk

\* Population according to the Census of 1901 is 13,067.

Bay, to the vicinity of the little bathing village of Blackrock, on the south. A similar plain occurs further south, at the mouth of the River Fane. These plains upon which the town is built are estuarine alluvia. The general character of the deposit here is a shelly gravel, with sandy and silty layers; shells, however, are not present everywhere throughout, but in some parts of the plain they occur in great quantity. The solid rock underlying the gravel, and forming most of the country about Dundalk, is of silurian age, and consists of hard grits and slates. There are some isolated tracts of limestone to the north of the town, outliers of the tract of that formation that extends along the northern shore of Dundalk Bay to Greenore and Carlingford.

Infectious  
Disease  
(Notifica-  
tion) Act  
adopted.

The Urban District Council has recently adopted the Infectious Disease (Notification) Act, 1889.

During the past year cases of infectious disease occurred as follows, within the area under the jurisdiction of the Urban Council:—

Typhus Fever,	.	.	.	.	4 cases.
Enteric do.	.	.	.	.	4 "
Diphtheria,	.	.	.	.	6 "

Stringent measures as to isolation and disinfection were carried out in each case, as well as prompt removal to the Fever Hospital. It was considered probable that the cases of typhus fever were due to overcrowding. The active preventive measures taken prevented the further spread of this fever.

The  
housing  
of the  
working  
classes.

The conditions under which a considerable proportion of the labouring classes live cannot be regarded as satisfactory. The Urban District Council have recently taken steps to erect dwellings in Sea-town and Castletown-road. In the former district forty-eight houses will be erected, and twenty-eight are being built in the latter district. It is proposed to expend nearly £10,000 on this project. It is evident that a local demand has arisen for artisans' dwellings, and the Council should still further seek a remedy for the improvement of the large number of unhealthy areas that exist in the town.

A number of these unhealthy areas are situated in the very centre of the town, viz.:—M'Kevitt's-court, Kelly's-court, Parke's-court, Shield's-yard, Feehan's-yard, Wood's-court, Wrightson's-lane, Defender's-lane. The majority, if not all, of the houses in these court-ways have no back-yard accommodation whatever. The result is that organic and vegetable refuse matter is deposited at the very doors, and is cast in front of the houses. Some of the laneways end in a cul-de-sac, and the dwelling-rooms, as a rule, are very small, ill-ventilated, and, in many instances, overcrowded, and with no proper arrangements for the separation of the sexes. Several of these court-ways are approached by an archway, which is obviously very objectionable, and prevents thorough ventilation, as well as forming a place for the committal of nuisances.

Other insanitary areas are Sand-hole, Gray's-lane, Isle of White, and Hill-street.

The Housing of the Working Classes' Scheme, at present being carried out by the Council, should, to an extent, somewhat relieve the congestion that exists in certain quarters of the town, and the Council deserve credit for the initiation of this most useful and necessary scheme. It should be an incentive to the Council to make still further provision for the better housing of the labouring classes.

The water supply is derived from the Ballymakellet River, or, water more correctly speaking, from the streams that unite to form that supply. river. The catchment area on Ballymakellet Mountain (which is one of the Ravensdale range) comprises about 1,220 acres, and is about six and a half miles distant from Dundalk. There are four inhabited houses within the catchment area, and there is very little, if any, pasture land or tillage included in the area; the possibility of pollution is thus very much minimised in consequence. The intake of the supply is also above the highest inhabited house. The water is conveyed to a storage reservoir at Annaskeagh, situated about four miles from the town, and which has a water surface of about 7 acres and a depth of 28 feet, and is capable of holding 32,530,000 gallons. The service reservoir at Faughart, about 100 square feet in diameter, is situated about two and a half miles from Dundalk, and holds 500,000 gallons.

The storage reservoir is slightly over 200 feet above the level of the town, and the service reservoir or tank is 150 feet above the central point. The supply per head per diem is estimated at 28 gallons for all purposes, domestic and manufacturing. The geological formation of the catchment area is composed of bare rock and felstone spar, and is practically free from peat. Previous to the introduction of the present pipe service, the public supply of water was derived from pump wells, many of which were of a surface or shallow nature, and liable to contamination.

The income derived from the waterworks averages from £800 to £900 per annum.

There is no filtration of the water. A comparatively recent analysis shows that it is a good drinking water. The analysis is appended. The pressure derived from the present sources of supply is regarded as insufficient to reach the top level of the highest inhabited houses, and in case of fire this would be a serious contingency to deal with. It is suggested that the calibre of the water mains is somewhat inadequate, and that the system of supply was originally designed for a population of 12,000, and that the additional increase of houses and consumers must naturally affect the supply. The want of a high pressure has also been attributed to leakages and waste. The question of how best to provide for a high-pressure water supply, that would be available in cases of fire, is one that should seriously commend itself to the Council.

(Copy Report.)

Report from Sir Charles A. Cameron, M.D., D.P.H., CAMB. UNIV., F.R.C.,  
Past President and Professor of Chemistry and Hygiene, Royal  
College of Surgeons in Ireland; Medical Officer of Health for  
Dublin; Public Analyst:—

City Laboratory, 17 Castle-street,  
Dublin, 9th December, 1898.

W. 6281.

Composition of water analysed for the Town Commissioners of  
Dundalk:—

One Imperial gallon (70,000 grains) contains in grains:—  
Marked—

Colour looked through a tube 2ft. long,	Light yellow.
Odour at 100 F.,	Nothing peculiar.
Total solid matters,	5·600

## Including :—

Albuminoid Ammonia,	0.010
Saline Ammonia,	0.002
Nitrous Acid,	None.
Nitric Acid,	Trace.
Chlorine,	0.695
Sulphuric Acid,	None.
Equal to Calcium Sulphate,	None.
Phosphoric Acid,	None.
Hardness,	2 deg.
Suspended particles,	Few.
Turbidity,	None.
Sediment,	Slight.

**MICROSCOPIC EXAMINATION.**—A moderate number of micro-organisms present.

This is a good water.

Sewerage  
and  
drainage.

The sewerage of the town, taken as a whole, appears to be in a satisfactory condition. Owing to the conformation of the ground surface, and general flatness, some slight difficulty in providing suitable fall for some of the sewers was experienced, but, owing to the system of flushing, deposits on the sewers are prevented. A number of manholes were opened at my request; all the sewers examined appeared to be in good working order, and very little deposit was observable in any of them. The main sewers are flushed weekly during the summer months, and at frequent intervals during the winter months.

There are three flushing tanks of considerable size, capable of containing about 2,000 gallons each, and which, I understand, act automatically. These tanks are situated along the main system in different parts of the town. In addition to these, the manholes at the head of each sub-section are also utilised as flushing tanks, and are regularly filled, and the sewers flushed from them.

Gradients  
and con-  
struction  
of sewers.

The gradients of the sewers vary in different portions of the town, the inclination as regards fall being 1 in 1,000 in some cases, and ranging from 1 in 500 to 1 in 300 in others. The entire system is periodically opened and inspected, and there are three main outfalls, which all discharge into the Dundalk tidal river,—two of them discharging under low-water mark, and one over low-water mark.

The town sewers were constructed at various intervals, and the older sewers are of the rubble-built masonry pattern, having brick-inverted bottom, arched over with stone. In other portions there are large brick and cement egg-shape sewers, and more recently the earthenware-pipe system has been introduced, the pipes varying in diameter from 18 inches to 12 inches. All the sewers that have been constructed since 1890 are provided with manholes and ventilating covers. The sewers constructed previous to that year are without any system of ventilation. Efforts should be made to provide an efficient system of ventilation for all the sewers in the town.

I am informed that the majority of houses are connected with the main sewers; there is, however, no map of the sewerage system. An important town such as Dundalk, with an increasing population, and new houses being constantly erected, requires a correct and authentic record to be kept of the sewerage system and house drainage connections, and the Council should consider the question of providing a map indicating the system of sewerage and drainage.

Some few localities, I have been informed, still require to be provided with sewers; it is, I understand, in contemplation to connect these districts with the main system at an early date.

The public cleansing and scavenging of the town stands in need of some improvement, and the surface channels and water tables all through the principal thoroughfares require more attention than is at present bestowed on them. In many cases the channels are not in good repair. On the occasions of my visits, I noticed that accumulations of mud and street refuse were allowed to remain for much too long a time without being removed. In some instances, liquid mud was swept to the sides of the streets into the channels, and left to solidify, instead of being removed immediately. A large amount is paid for scavenging, I understand; but a better and more systematic method is required that will show better results than obtain at present.

A system of domestic cleansing is carried out by the Council, and appears to work satisfactorily. The cleansing of ashpits is done free of any expense to all householders, who are rated at £6 and under. A charge of 2s. is made in the case of houses whose rating is between £6 and £10. The system has had very beneficial results as regards the poorer and more congested areas in the town; seven men and three carts and horses are exclusively employed at this duty. All the town refuse is removed to slosh lands near the sea border, about a half-mile distant from the town. The Sanitary Staff is comprised as follows:—

Mr. Mathew Comerford combines the duties of Executive Sanitary Officer with those of Clerk to the Urban District Council. There are two Medical Officers of Health, viz.:—Dr. E. F. Flood, for the North District, and Dr. J. C. Sellars for the South District. Both Medical Officers keep themselves fully acquainted with the sanitary circumstances of their respective districts, and furnish reports to the Council of any conditions adverse to the public health, and that may require attention. The duties of Sanitary Sub-Officer are discharged by Mr. Laurence J. Curran, who also acts as Inspector of Dairies and Slaughter-houses, Inspector of Common Lodging-houses, Public Lighting, Hackney Carriages, Town Water Supply and House Connections, and Factories. He also supervises the duties of seven men, who are employed exclusively in the domestic cleansing of ashpits, &c. This officer is anxious to carry out his duties, which are very numerous, in an efficient manner. In view of the fact that the Council undertake a system of domestic cleansing, which the Sanitary Sub-Officer supervises in addition to his other duties, assistance would seem indicated. The number of inspections made by the present officer for the past year was 1,033, and the number of ashpits cleansed by the Sanitary Authority was 757.

There is no disinfecting apparatus. One has recently been erected at the Union, which is availed of by the Urban Council when required. Cases of infectious disease are also removed to the Union Fever Hospital, there being no Fever Hospital in the town.

Summary of sanitary work during the year 1900:—

Insanitary condition of houses attended to, . . . . .	197
Keeping of animals, . . . . .	14
Waste water, . . . . .	30
Defective drains, . . . . .	59

Summary  
of sanitary  
work  
attended  
to during  
the year  
1900.

Number of sanitary notices served, . . . . .	125
Number of inspections made by Sanitary Sub-Officer, . . . . .	1,033
Number of ashpits cleansed by the Sanitary Authority, . . . . .	757
Overcrowding, . . . . .	0

It would seem that no case of overcrowding was brought to the notice of the Council during the year 1900. From my observations, I am strongly inclined to the belief that overcrowding exists to a considerable degree in some of the dwellings in the court-ways that are mentioned in this report. An occasional "surprise" visit by the Sanitary Sub-Officer in the early hours of the morning to these places would most probably reveal this fact.

**Slaughter-houses.** There are nine registered slaughter-houses. In addition to this number there are several hutches—about eight in number—who are not licensed, and who jointly use a slaughter-house that is situated in the centre of the town, and which is immediately surrounded by a number of small dwellings. The slaughter-house, as well as the small yard attached, were both, on the occasion of my visit, in a most filthy and insanitary condition, and it was quite evident that there were no regulations in force dealing with the proper keeping of slaughter-houses. The Medical Officer of Health for the district, Dr. Flood, has reported on this public slaughter-house, and the Council has not, as yet, taken any steps in regard to it. The place is wholly unsuited for its purpose. Its very position is detrimental to the public health. I visited most of the private slaughter-houses, and, as a rule, the majority were uniformly clean, ventilated, and fairly well kept. The erection of a public abattoir would be a great advantage in Dundalk. The Council would also be well advised in adopting a code of bye-laws governing the keeping of slaughter-houses.

**Common lodging-houses.** There are twelve registered common lodging-houses. They are visited and inspected regularly. The notice-boards on the houses do not show the words, "Registered Lodging-house," as required by Section 90 of the Public Health (Ireland) Act, 1878. As a rule, the lodging-houses are fairly well kept, but it is obvious that some of them at times may be overcrowded.

**Dairies and cow-sheds.** There are thirty-one dairies and cow-sheds within the Urban District. They are not registered or subject to any regulations. The majority are not as well kept as they might be. In a few instances, I found pigs kept in close proximity to the cow-shed, and in others there were large accumulations of manure, which were allowed to remain unremoved for much too long a period. The Council should consider without undue delay the question of adopting a code of regulations for the management of dairies, cow-sheds, and milk-shops. Bye-laws are already in force dealing with common lodging-houses, scavenging, water supply, and new buildings. To this code should be added bye-laws dealing with slaughter-houses, and regulations as to dairies, cow-sheds, and milk-shops.

**Recommendations.** The District Council should seek competent engineering advice as to how best to provide for an increase in the pressure of the existing water supply, and although the last analysis of the water is favourable, a system of filtration, if carried out, would also be very desirable, and would act as a certain and an assured safeguard against possible pollution.



The Council should take into consideration the question of adopting regulations for the management of dairies, cow-sheds, and milk-shops, and bye-laws as to slaughter-houses.

A better-devised and improved system of public cleansing and scavenging is also necessary, and should be carried out.

A map showing the sewerage and drainage system of the town ought also to be provided.

The Council should consider the desirability of extending the system of main sewers to those districts that may require it.

I have to thank the Medical Officers, the Executive Sanitary Officer, and the Borough Surveyor for the assistance they were good enough to afford me during the course of my inquiries, and also Mr. Nolan, of the Geological Survey of Ireland.

D. EDGAR FLINN,

Medical Inspector.

March, 1901.

## DUNGARVAN.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE DUNGARVAN URBAN  
DISTRICT.

BY DR. T. J. BROWNE.

General  
Description.

Dungarvan Urban District comprises an area of 1,338 acres, and is situate on the Bay of Dungarvan, at the mouth of the River Colligan, which divides it into two portions, the western portion forming the town of Dungarvan, and the eastern portion, Abbey-side. During the summer months there is a considerable influx of visitors for sea-bathing. The population, according to the Census of 1891, was 5,263, and the number of inhabited houses, 1,480. The rateable value is £8,145 5s., and the liabilities, £7,167 4s. The imports are coal and Indian corn, chiefly, and the exports, grain, butter, cattle, pigs, and fish. There is one brewery, and there are two creameries in the town, and sea-fishing is engaged in to a limited extent. Weekly markets and monthly fairs are held. Only a small portion of the district is built on, the remainder being tillage or pasture lands.

The geological formation is limestone.

**Dwellings.** As already stated, the number of occupied houses is about 1,480. About a third of this number are occupied by the better classes,—business people, &c. These are, for the most part, fairly well circumstanced as regards sanitation, being provided with domestic water supplies, drainage, and sanitary conveniences. The remaining two-thirds of the houses are chiefly occupied by the working classes, and are not provided with sanitary accommodation or efficient drainage. Nearly all have back yards, which are usually unpaved and undrained, and in an insanitary state from collections of manure and filth, which is only removed at long intervals, and then brought through the dwellings, there being usually no back entrance to the yards. Pigs are commonly kept in these small yards, and add greatly to the general insanitation. The great majority of this class of houses are one-storeyed and slated, having two or three apartments with earthen floors, and are in a fairly good state of repair. Overcrowding is uncommon, and there appears to be not much necessity for additional housing accommodation for the working classes, if the existing houses were put in a proper sanitary condition. The Sanitary Authority have provided ten houses under the Housing of the Working Classes Act, at a cost of £1,800. These houses are of a good class, and are occupied by tradesmen, &c., the rent of each being 3s. 6d. per week. The most insanitary localities are Lower Strand-street, Cross-street, Strand-street, Patrick-street, Wolfe Tone-street, and Lord Edward-street.

Water  
supply.

The town was provided with a water supply by gravitation from Kiladangan, about two miles distant, in 1891, at a cost of £6,300,

the source of the supply being springs and mountain streams. The reservoir has a capacity of 20,000,000 gallons. The water is filtered, and conveyed from the reservoir to the town in 8-inch pipes, to all parts of which it is distributed in pipes of smaller diameter. There are twenty-six public fountains in different parts of the district for the supply of the poorer class of the population. The Union Workhouse, Mineral Water Manufactory, two Creameries, Industrial Buildings, Convent and Christian Brothers' Schools, Turkish Baths, &c., are supplied, in addition to 140 private houses. The head pressure is not sufficient to send the water to the higher parts of the district; this may be due to the enormous waste which is said to be constantly going on. The supply provides for twenty-three gallons per head per day, but a large quantity is wasted. A Water Inspector has been appointed to look after the waste, but he seems to pay little attention to his duty. The quality of the water, when last analysed, about three years ago, was pronounced to be good. The water from the Brewery Well is also used by some of the inhabitants, and is of fair quality.

The existing sewerage of the district is wholly insufficient. Only a portion of the town is sewered, and, where made, the sewers are defective in construction. A new scheme of sewerage at an estimated cost of £2,000, has been sanctioned, and the work will soon be commenced. This scheme embraces the entire town, and, when completed, the Sanitary Authority should compel all owners of property to make connections. The sewerage will be discharged into the tide at low-water mark on ebb tide. There are mussel-beds near the outfall, but the mussels are not used for dietetic purposes.

About eighty houses are provided with water-closets, and sixty have midden privies. The remainder have no sanitary conveniences, the excrement being disposed of on the manure pits in the back yards, which are cleaned out about three times in the year. The Sanitary Authority does not undertake the domestic scavenging, except to a very limited extent, two men and one horse and cart being employed at this work. The manure and refuse from the streets is removed to the manure dépôt on the Youghal-road, and sold periodically. The manure dépôt is well isolated, and the site satisfactory. The domestic scavenging is very imperfectly done; this duty devolves on the occupiers of houses who, as a rule, are too poor to defray the cost. The Sanitary Authority should require all houses not having sanitary conveniences to be provided with covered receptacles for ashes and refuse, and should have these regularly cleaned out. When the new sewerage system is completed the water-carriage system for excrement disposal should be generally adopted.

There are four common lodging-houses in the district, none of which are provided with sanitary conveniences or water supplies. They are fairly well kept, but are not registered or regularly inspected.

There are six slaughter-houses in the district, all of which are defective in construction and badly drained; with one exception, they are situated too close to dwellings, and are not kept in a cleanly state; manure and offal is allowed to accumulate in their vicinity.

There are no dairies, cow-sheds, or milk-shops in the district, the milk supply being obtained from the country district. There are two creameries in the district, which are well kept and fairly circumstanced as regards drainage and sanitation generally.

**Bake-houses.** There are about thirty bakeries in the district, some of which are situated in very confined spaces, while, in some instances, cleanliness is not sufficiently observed.

**Piggeries.** There are about sixty piggeries in the district, nearly all of which are situate in small confined yards, and are unprovided with drainage. They are kept in a very filthy state, and constitute a source of danger to the public health.

**Sanitary Administration.** The Dungarvan Urban District Council meet regularly, fortnightly, for the transaction of public health business. The proceedings are recorded by the Executive Sanitary Officer, but are not regularly submitted to the Local Government Board as required by the Sanitary Order. The necessary orders are usually made on the reports of the Medical Officer of Health and Sanitary Sub-Officer, but are rarely enforced. The sanitary administration is, on the whole, rather lax.

The Sanitary Staff consists of:—

Executive Sanitary Officer—Mr. T. M. McCarthy.

Consulting Sanitary Officer—Dr. Hackett.

Medical Officer of Health—Dr. Williams.

Surveyor—Mr. Beary.

Sanitary Sub-Officer—Mr. P. O'Connor.

The Medical Officer of Health during the past year furnished thirty-eight reports, about half of which number only were acted on. The Sanitary Sub-Officer furnished thirty-five reports to the Medical Officer of Health, and reports to each meeting of the Council. Ninety-three notices were served for the abatement of nuisances, about half of which were complied with. One prosecution only was instituted. The Sanitary Sub-Officer does not keep a diary of the work which he performs. It would be well to impress upon him the necessity of making more frequent and careful inspections of the district.

**Hospital accommodation and disinfection.** The Workhouse Fever Hospital is available for the reception and treatment of such patients. There is no disinfecting apparatus available.

There is an ambulance at the Workhouse, which is available for the conveyance of patients to hospital suffering from diseases of an infectious nature.

The Infectious Disease (Notification) Act is in force in the district.

**Bye-laws.** There are no bye-laws under the Public Health Act in force in this district.

**Recommendations.** The matters most demanding the attention of the Sanitary Authority are as follows:—

(1.) The remedying of sanitary defects in the dwellings of the working classes, and the abatement of nuisances arising from defective drainage, the keeping of pigs on premises, and the accumulation of manure and refuse in yards.

(2.) The provision of covered receptacles or sanitary conveniences in connection with houses for the reception of ashes, refuse, &c., and the regular cleansing and removal of same,

(3.) The desirability of the Sanitary Authority undertaking the domestic scavenging of the district.

(4.) The registration of common lodging-houses, and the necessity for requiring all slaughter-houses to be properly constructed, drained, and kept in a cleanly state.

(5.) The prevention of undue waste of the water supply.

(6.) The provision of a disinfecting apparatus. As one disinfecting apparatus would suffice for the requirements of the Dungarvan Urban and Rural Districts the Urban District Council might provide the apparatus, and the Rural Council contribute towards the cost.

(7.) Bye-laws under the Public Health Acts relating to the following matters should be adopted and enforced:—

- (a.) Cleansing of footways and pavements adjoining any premises.
- (b.) Removal of refuse.
- (c.) Cleansing of privies, ashpits, and cesspools.
- (d.) For the prevention of nuisances arising from filth, dust, ashes, and rubbish, and for the prevention of keeping animals on any premises so as to be injurious to health.
- (e.) New buildings.
- (f.) New streets.
- (g.) With respect to the closing of buildings unfit for human habitation.
- (h.) Slaughter-houses, and,
- (i.) Common lodging-houses.

THOMAS J. BROWNE,

Medical Inspector.

June, 1901.

## ENNISCORTHY.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE ENNISCORTHY URBAN DISTRICT.

BY DR. D. EDGAR FLINN.

General  
Description.

Enniscorthy is picturesquely situated on the River Slaney, which is navigable as far as the town. It occupies a position on both sides of the river the larger proportion of the population inhabiting the western side of the town.

The area of the urban district is 250 acres, and its population, according to the Census of 1901, is 5,459. The number of inhabited houses is 1,210, and the rateable valuation is £8,021 11s. The urban district rate at present amounts to 2s. 2d. in the pound, the current poor rate being 2s. 8d. in the pound. A considerable trade is carried on in Enniscorthy, and the town is a market centre for a very large and populous district. Fairs are also held at frequent intervals during the year. Employment is afforded to a large number of persons in different branches of trade, as there are several malting and milling stores, bacon factories, foundries, a brewery, creamery and cheese factory.

Enniscorthy was constituted an urban sanitary district in 1879.

Housing  
of the  
working  
classes.

Part III. of the Housing of the Working Classes Act has been adopted, and a scheme is at present under consideration, and will shortly be carried out for the erection of twenty houses on a site which has been selected, and which is in a favourable situation. An application for a loan of £2,800 for this purpose has been made. The dwellings inhabited by the labouring classes in many parts of the town cannot be regarded as satisfactory from a sanitary point of view; in many there is a total absence of privy and ashpit accommodation, and others have no back yards. Dwellings without back yards are to be found in Hospital-lane, Lower Church-street, Ross-road, Edward's-lane, Fayan's-lane, &c. Houses of this class are not suitable for human habitation, and every effort should be made, as opportunity arises, to close such premises. Many of the poorer class of dwellings are not in good repair, several showing signs of dampness and evidence of dilapidation. The smaller class of houses containing, in many instances, only two or three rooms, lack sufficient ventilation, and are apparently overcrowded at times.

Public  
cleansing.

The public cleansing and scavenging of the principal thoroughfares are, on the whole, fairly well carried out. In the smaller thoroughfares and bye-lanes there is, however, need for improvement. Arrangements should be made for the more frequent removal of filth refuse from the localities inhabited by the poorer classes, more especially from the neighbourhood of those houses where rubbish is deposited on the thoroughfares. The scavenging is at present carried out by a staff consisting of four labourers, with horses and carts hired by the Council. This class of work would probably be more

efficiently and satisfactorily performed if the Council possessed their own horses and carts, and, from the point of view of economy alone, such an arrangement should commend itself.

The street scrapings and collections of vegetable and organic refuse matter are at present deposited at a manure depôt on the west side of the River Slaney. It is regrettable that the depôt is situate so near the town, as, although not in close contiguity to dwelling-houses, the site is not at all a good one, and efforts should be made to obtain a site further removed from the town. In this connection the question of the disposal of refuse matter by the burning process might be considered by the Council. The erection of a small Refuse Destructor, containing one or two cells, would be of decided advantage in a town situated as Enniscorthy is, as the collection of large masses of decaying vegetable and organic filth and rubbish in the centre, or even immediate neighbourhood, of a populous town is prejudicial to the health of the inhabitants.

Disposal  
of refuse.

The town derives its supply of water from two sources, viz.:—  
Drumgoold and Shiel's Well. The reservoir at Drumgoold, from which the houses situate on the higher levels are supplied, is situated about a half-mile from the town, and is about ten feet above the highest point of the town. The reservoir at Shiel's Well is quite close to Enniscorthy, and is principally utilised for supplying the lower parts of the town with water. During the summer months the supply is stated to be scanty, but otherwise the water is of a good quality. There are no filter-beds, but the catchment area, which is between 300 and 400 acres in extent, is remarkably free from the chances of pollution. A considerable revenue is derived from water-rents.

Water  
supply.

The present system of sewers has been in existence for a number of years. The main sewers are all, I am informed, of the rubble-built pattern, having paved bottoms; they are covered in with flags, the gradients varying in different parts of the town from one in ten to one in sixty. All the sewage matter is discharged directly into the river by several outlets, converging from the east and west sides of the town. This is very objectionable from a health point of view, as all the outlets have their point of exit within a very limited area, and in the very centre of the town, the result being that the fore-shore of the river is much polluted with sewage matter, and during the summer and autumn months, at low water, it presents an insupportable appearance. The frequent cleansing of this portion of the river is very necessary. No provision appears to be made for the ventilation of the sewers in any portion of the town, and an improved system of sewerage should engage the early attention of the Council.

Sewerage  
system.

A code of bye-laws are at present under consideration, dealing with buildings nuisances, keeping of animals, and slaughter-houses. The adoption of bye-laws will assist very materially in improving the sanitary administration of the town.

Bye-laws  
under the  
Public  
Health  
Acts.

There are five slaughter-houses, which, on the whole, are kept in a cleanly condition, but one of them is situate much too near a dwelling-house. The removal of manure and offal from the yards in connection with the slaughter-houses should be carried out more frequently than at present.

Slaughter-  
houses.

There are twenty-eight cow-sheds and dairies within the urban district. Regulations have recently been adopted and sanctioned by the Local Government Board with regard to dairies, cow-sheds, and milk-shops. The condition of the cow-sheds is, on the whole, satisfactory, but there is room for great improvement as regards proper and sufficient drainage.

Cowsheds  
and  
dairies.

Common  
lodging-  
houses. Regulations are in force dealing with common lodging-houses, and they are regularly, I am informed, inspected by the Sanitary Sub-Officer.

The Infectious Disease (Notification) Act, 1889, has been adopted in the urban district.

Houses  
without  
sanitary  
accommo-  
dation. There are very nearly 200 houses without privy or ashpit accommodation in the urban district. The absence of sanitary accommodation of this kind tends to encourage habits of uncleanness amongst the labouring classes, and this question is deserving of the earnest attention of the Council.

Sanitary  
staff. The Executive Sanitary Officer is Mr. P. J. Shaw, and the Medical Officer of Health is Dr. Thomas J. Kelly, who takes an active interest in the sanitary administration of his district. I have to thank both these officials for the assistance afforded to me during the course of my inspection.

D. EDGAR FLINN,  
Medical Inspector.

June, 1901.



## FERMOY

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE FERMOY URBAN DISTRICT.

BY DR. T. J. BROWNE.

Fermoy Urban District is situate in the north-eastern portion of county Cork. The River Blackwater flows through the town, the greater part being on the southern side of the river. The portions of the town nearest the river on either side are low-lying; the remainder is considerably elevated. Fermoy is an important military station, troops to the number of 1,500 being quartered in the barracks, which is situate in the Urban District. The area of the district is 273 acres, and the population, according to the Census of 1891, was 6,450, which included the military. The valuation of the district is £10,320, and the liabilities £14,000. The total rates levied in the last year amounted to 5s. in the pound. The number of occupied houses is about 900, which does not include the military barracks. Weekly markets and bi-monthly fairs are held in the town; also quarterly horse fairs, which are largely patronised. Industrial employment is confined to mills, a mineral water manufactory, a creamery, &c.; but the number of persons employed in these concerns is small.

The better-class houses, numbering about 300, are, for the most part, fairly well circumstanced as regards sanitation, being provided with domestic water supplies, good drainage, water-closets, &c. The poorer class of the population reside in the lanes and bye-streets, of which there are twenty-five of the former, and twenty of the latter. These houses are, generally speaking, of a poor class, being one-storey buildings, with one or two apartments, and having earthen floors, which are, in some instances, damp. They are not provided with sanitary conveniences, and the back yards, where such exist, are unpaved and undrained. The yards are usually kept in a very filthy state from collections of manure and refuse; piggeries are commonly to be found in these yards, which, owing to their situation and condition, are a source of danger to the public health. The worst localities are as follows:—Pound-lane, Bog-lane, Cross-street, Messhouse-street, William-street, Newmarket-lane, Newmarket-range, portion of Prince's-street, Stone-lane, Bridewell-hill, &c. Twenty-four good houses have recently been provided by the Sanitary Authority for the artisans and labouring classes. These houses are well constructed, and the sanitation is good; the rents vary from 2s. to 3s. 6d. per week. Additional houses are required for the working classes in the town to replace those unfit for habitation.

**Water supply.**

The town is supplied with water by gravitation from a mountain stream and springs on Knockanaig hill, which is distant about three and a half miles from Fermoy. There are about 600 acres of land comprised in the watershed, the natural drainage of which contributes to the supply. None of the land is under tillage. The water is conveyed in 8-inch pipes from the reservoir at Knockanaig to the town, to all parts of which the water mains are extended. The reservoir has an elevation of 150 feet above the highest part of the town, and has a capacity of 30,000,000 gallons. During periods of long-continued drought, such as was experienced during the summer of 1887, the supply proves insufficient; this is said to be due to a large extent to the constant waste which goes on owing to defective taps, and carelessness on the part of the consumers in allowing taps to run continuously. The Sanitary Authority, I am informed, have under consideration a scheme to supplement the supply. The water has not been recently analysed, but the last analysis was to this effect that the quality of the water was good. The water is filtered, the filter-beds being regularly renewed.

**Sewerage and drainage.**

The other sources of water supply are four public pumps and several private pumps in yards in the town; also two public wells. The water from these latter sources has not been recently analysed. All the main streets and bye-streets, &c., of the town are sewered, with the following exceptions, viz.:—portion of Francis-street, portion of Prince's-street, William-street, Cross-street, Mill-road, Pound-lane, and Bog-lane. The houses and premises in Cork-road, Cork-hill, Prince's-street, and Bridewell-lane are not connected with the sewerage system. Some of the sewers are constructed of rubble masonry; others with earthenware pipes. The outfall of the sewers is into the River Blackwater at several points in its course through the town, principally below the bridge, and in warm weather, when the river is low, a nuisance is caused at the bridge by the odours given off from the sewage matter.

**Excrement and refuse disposal.**

The excrement is disposed of, to a considerable extent, by water-closets and midden privies. The latter are, as a rule, kept in a very uncleanly state, and are only cleaned out at long intervals. The poorer class of houses have no sanitary accommodation, the excrement, refuse, &c., being deposited on the surface of the yards where they exist, or on the public streets. With few exceptions, there are no back entrances to the yards, the refuse, &c., on removal, being taken through the dwelling-houses. As the Sanitary Authority do not undertake the domestic scavenging, this duty devolves on the householders, and is carried out in a most unsatisfactory manner. The condition of many of the yards, owing to the collections of manure and filth of all kinds, especially where pigs are kept, is extremely bad, and a source of great danger to the public health. The manure dépôt is situate in the centre of the town, close to several dwellings, and the site is consequently a most objectionable one.

**Roads, streets, &c.**

The roads and streets in the district are under the control of the Urban District Council, and are in a bad state of repair and defectively scavenged. The staff employed is insufficient for the purpose.

**Slaughter-houses.**

There are five private slaughter-houses in the district. Some of them are defective in construction and situated in close proximity to dwelling-houses, and are not properly drained. In two or three instances pigs are kept close to the slaughter-houses, and cleanliness is not sufficiently observed.

There are about seventy tenement houses in the district, each occupied by two, three, or four families, each family occupying one or two rooms. With a few exceptions, these houses are of a fairly good class, but are unprovided with sanitary conveniences. In some instances overcrowding exists, and the houses are not kept in a cleanly state. Houses let in lodgings.

There are six registered common lodging-houses in the district, some of which are structurally defective and unsuitable, and are not provided with sanitary conveniences or water supplies. The cubic space available for each lodger is insufficient, and cleanliness is neglected. Common lodging-houses.

The Fermoyn Urban District Council meet regularly once a week. The necessary orders are made on the reports of the Medical Officer of Health and Sanitary Sub-Officer, and, when not complied with, are generally enforced. During the past year the Medical Officer of Health, Dr. Dilworth, furnished twenty-five reports dealing with sanitary defects to the Council. The Sanitary Sub-Officer, who has been in office only since July last, furnished thirty-six reports to the Medical Officer of Health, and sixty-one to the Council. Seventy-four notices were served for the abatement of nuisances, fifty-three of which were complied with. Eighteen prosecutions were instituted for non-compliance with notices. The Sanitary Sub-Officer, in addition to the duties connected with the office of Sanitary Sub-Officer, superintends the scavenging of the streets, the public lighting of the district, the night-watch, regulates the street traffic on market days, and collects the rents of artisans' and labourers' cottages. He has had no previous training in the duties of a Sanitary Sub-Officer, and has been rather lax in the discharge of his duties, but being an intelligent and active young man, he will, no doubt, in a short time, become an efficient Sanitary Officer. Sanitary Administration.

The Fever Hospital connected with the Fermoyn Workhouse is available for the reception and treatment of patients suffering from the various forms of infectious disease. There is no disinfecting apparatus provided, which is a serious drawback and source of expense to the ratepayers owing to the compensation paid by the Sanitary Authority in respect of infected articles destroyed to prevent the spread of disease. There is an ambulance at the Fever Hospital for the conveyance of the sick to the hospital. Hospital accommodation, &c.

Bye-laws for the regulation of common lodging-houses and slaughter-houses have been adopted, but there are no other bye-laws under the Public Health Acts at present in force in the district. Bye-laws.

Neither the Infectious Disease (Notification) Act, 1889, nor the Infectious Diseases (Prevention) Act, 1890, has been adopted by the Sanitary Authority, nor have regulations been made under the Dairies, Cow-sheds and Milk-shops Order.

The matters which demand the attention of the Sanitary Authority may be summarized as follows:— Recommendations.

- (1.) The provision of healthy dwellings for the working classes, to replace the existing insanitary houses.

- (2.) The prevention of undue waste of the water supply.
- (3.) The provisions of sewers in the portions of the district which are unsewered, and the connection of all premises with the sewerage system; also the abatement of the nuisance caused by the outfall of the sewage.
- (4.) The provision of sanitary conveniences in connection with all dwellings, or, where this is not practicable, as in the case of houses without back premises, covered receptacles for ashes, refuse, &c., which should be emptied daily.
- (5.) The desirability of the Sanitary Authority undertaking the domestic scavenging of the district.
- (6.) The prevention of the keeping of swine on premises so as to cause nuisances.
- (7.) A suitable site for a manure depôt should be provided.
- (8.) The scavenging of the streets should be better attended to, and the streets kept in better repair.
- (9.) The slaughter-houses, where defective in construction, drainage, cleanliness, and situate too close to dwellings, should be dealt with.
- (10.) The common lodging-houses, which are unsuitable, should be struck off the Register, and overcrowding in tenement dwellings prohibited.
- (11.) The Infectious Disease (Notification) and (Prevention) Acts should be adopted.
- (12.) A disinfecting apparatus should be provided.
- (13.) More careful inspection of the district should be made by the Sanitary Sub-Officer.

THOMAS J. BROWNE,

Medical Inspector.

March, 1901.

## GALWAY.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE GALWAY URBAN DISTRICT.

BY SIR ACHESON MACCULLAGH, M.D.

The Urban District of Galway, situate on the north side of Galway Bay, comprises an area of 5,320 acres, the district extending on each side for a distance of two miles from the centre of the town. On the west side on the sea is the suburb of Salthill, to which large numbers of visitors resort in the summer time. General Description.

The population in 1891 was 13,800; it is now probably less.\* The inhabited dwellings are about 3,000, giving an average of 4·6 to each house, and 2·6 to each acre.

In the year 1900 the birth-rate was 24·3, the death-rate from all causes 30·3, and the death-rate from the principal zymotic diseases 1·7 per 1,000 of the population.

The rateable value is £26,730; the liabilities are £11,179. These loans will be all paid off at the end of 1904.

The River Corrib flows through the town.

The majority of the houses are old. All the houses in the principal streets, and a good many in the smaller ones, are provided with water-closets. About 1,000 houses have privies, but there are a large number without any sanitary conveniences whatsoever. About 300 houses are without back yards. Very few of the privies or ashpits are properly built, many of them being of a most primitive description. A large number of the water-closets in the poorer localities are faulty in construction; the houses in these localities are generally one-storey, with two rooms in each, and are defective as regards ventilation and air space; the yards in many instances are either unpaved or very imperfectly done, and the drainage absent or defective. Dwellings

There are 1,659 houses valued at £5 and under. There are twelve tenement houses in the town.

Seven houses have been built by the Commissioners under the Housing of the Working Classes Act, 1890.

The water supply of the Urban District is procured from Lough Water Corrib by pumping. The pumping station is about a mile from the town, and the water is sent up to the two service reservoirs on Prospect-hill; these reservoirs are seventy-eight feet above the sea level; the extent of each is 90 by 45 feet, with a depth of 8 feet, the capacity of each being equal to about a two-days' supply; at present one of them is not used owing to leakage. Their situation is not a desirable one, as, though not liable to contamination from

\* Population according to the Census of 1901 is 13,414.

drainage, they are close to the roadside, and dust and other particles are blown into them. There are no filter beds, the water being conveyed directly from the reservoirs into the mains; more care ought to be taken of the ground round the reservoirs.

Though the water supply is a continuous one, many houses have only a partial supply, and a large number are not supplied at all, as there is not sufficient pressure to reach the higher levels. A large number of houses have separate branch-pipes from the mains. In the smaller streets the supply is given by street fountains. The daily supply is about thirty gallons per head to those supplied.

Sewerage.

There are several main sewers in the town, some being built sewers, others piped. Their outfall is into the river, all except one discharging above the water level. There is no main drainage in University-road, the houses here being drained into cesspools at the back. Nun's Island is also without a main sewer; each house drains into the river directly; the same applies to Newtonsmith-street. Sickeen has a main sewer for only a portion of it; new houses are being built in this locality, and it will be necessary to provide for their drainage.

Bohermore, a thickly-populated district, is also without a main sewer; the drainage, &c., from each house percolates through the gardens at the back down to an open surface drain, which runs through the Magdalen Asylum grounds, and catches the sewer at College-road. This drain is occasionally cleaned out by the Urban Council's employees.

The house drains connecting with the main sewers in very many cases come out under the halls of the houses. These connections are made of earthenware pipes; in many instances they are not properly ventilated, and, to the best of my knowledge, in very few cases laid in concrete.

In the poorer localities the house slopes, as a rule, are thrown on the street, there being very few house connections.

There are a good many street ventilators, but these are practically useless, as they are rarely, if ever, cleaned, with the result that they become choked with mud, &c. To be really efficacious, their number should be increased, and they should be regularly freed and cleaned.

Refuse disposal.

No provision has been made for domestic scavenging. On an average thirteen men, with four carts, are employed daily in the cleaning and scavenging of the streets, lanes, channel-ways, &c. These men are supposed to visit each street and lane daily, but the work is most imperfectly performed, and no record is kept of the places visited each day. During my inspection I saw several places where the scavengers had not been for some days.

No provision has been made for the regular and systematic cleansing of privies and ashpits, nor for the removal of house refuse, night-soil, &c., from those houses which have no back yards and no sanitary conveniences. The people from these houses put everything on the streets, and the scavengers on their rounds gather it up, but no boxes or other receptacles are provided.

In many instances, especially in the back streets, the channel-ways are most defective, and it is difficult to properly cleanse them.

Manure depôt.

The Urban Council have their manure depôt at Sickeen, adjoining the public road, and close to several dwellings. Some additional houses are at present being built in the neighbourhood, and as the odour from the depôt is often offensive, the site must be considered most objectionable.

There are no registered cow-sheds; and there are practically no milk-shops nor dairies in the district, as the milk is sent direct to the customers. The drainage and construction of most of the cow-sheds are defective. They are not properly ventilated, and there is a general want of cleanliness observable, while manure is allowed to accumulate close to the sheds in many cases, while in others pigs are kept near the sheds. Dairies, cowsheds, and milk shops.

There are twelve common lodging-houses registered, of which several are very unsuitable. Several houses are used as common lodging-houses, which are not registered. Common lodging-houses.

There is one public slaughter-house in the Urban District, and three private ones are licensed by the Council. The latter are kept fairly clean, but the concreting of their floors might be improved, and one of them is situate too close to inhabited dwellings. The public slaughter-house is not kept in a proper state. The walls should be cleaned, the floor repaired and regularly flushed, and the yard concreted. Slaughter houses.

This district, which is entirely inhabited by the fishing population, consists of about 200 houses. These houses almost all consist of two rooms, have no back yards—the front of one set of houses being at the back of another set—and no sanitary conveniences. A main sewer runs through the village, but as the surface drains are most imperfect, the house slope, &c., which are all thrown out on the street, are not carried away. In many houses pigs are kept, and manure heaps are to be seen in several places on the streets. A special sweeper has been appointed for this district, but the scavenging cart does not go there frequently enough, and the cleansing, &c., is not thoroughly carried out. Human excrement is to be seen lying about in many places. The erection of some public latrines in this district is a necessity. The Claddagh.

The Galway Urban Council consists of twenty-four members. They meet for sanitary business on the first Thursday of each month. They have no Public Health Committee; there is no Medical Superintendent Officer of Health. Sanitary Administration.

The Sanitary Staff consists of:—

- John Redington, Esq., Executive Sanitary Officer.
- M. A. Lyden, Esq., M.D., Medical Officer of Health.
- M. F. Lyden, Esq., M.D., Medical Officer of Health.
- W. Binns, Esq., Borough Surveyor.
- Mr. J. Waters, Sanitary Sub-Officer.

The Sanitary Sub-Officer devotes his whole time to the duties of his office, receiving a salary of £40 a year. He is an efficient officer.

Cases of infectious disease occurring in the Urban District are sent to the Galway Fever Hospital, which is under the control of the Guardians of Galway Union. The Sanitary Authority have no ambulance for the conveyance of infectious cases to the hospital, but they use the Union ambulance. At the Fever Hospital there is an efficient disinfecting chamber. Hospital accommodation for infectious diseases.

The Infectious Disease (Notification) Act, 1889, is in force in the Urban District, having been adopted in July, 1899, but there is no record of the number of cases notified under the Act. Twenty-six cases of infectious disease were admitted from the Urban District to the Fever Hospital during the year 1900. The Infectious Disease (Prevention) Act, 1890, has not been adopted.

No bye-laws under the Public Health Act, 1878, have been adopted. The district is lighted by gas.

The streets are macadamised; in some of the lanes and passages the surface is uneven and the channel-ways most defective. The eave-spouting is defective, and often absent; the down-pipes rarely discharge over gulleys or gutters, and are in many instances defective.

The following is a summary of the sanitary work done during the year 1900:—

Number of notices to abate nuisances, &c.,	103
Number of prosecutions for neglect of notices,	12
Number of convictions,	12
Number of houses, yards, and premises inspected	957
Number of houses limewashed,	291
Number of houses disinfected,	20
Articles of clothing disinfected,	78

In the course of my inspection I saw several houses which, from their wretched condition, total absence of sanitary arrangements, want of ventilation and air space, are quite unfit for human habitation. This is especially noticeable in some of the back streets and lanes in the district of Galway West.

Pigs are kept in most unsuitable yards, with little regard to cleanliness.

Recom-  
menda-  
tions.

The matters to which the special attention of the Sanitary Authority should be directed are:—

- The water supply.
- The adoption and enforcement of bye-laws under the Public Health Act, 1878.
- The enforcement of the regulations as to common lodging-houses.
- The closing of insanitary houses, and the providing of suitable dwellings for the working classes.
- The erection of proper privies and ash-pits, and the regular cleansing of same.
- The daily removal of house refuse, night-soil, &c., from houses which have no back yards, and the providing of a proper receptacle to each house.
- The paving, drainage, &c., of the back streets, lanes, and courts, and the periodic limewashing of the houses in these places.
- The prohibition of pig-keeping, except in suitable yards.
- The sanitary condition of The Claddagh.
- The appointment of an Inspector of Dairies, Cow-sheds, and Milk-shops.
- The improvement of the public slaughter-house.
- The removal of the present manure depôt.
- The adoption of a more efficient method of scavenging and cleansing the streets.

J. ACHESON MACCULLAGH,

Medical Inspector.

January, 1901.



## KILKENNY.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE KILKENNY URBAN  
DISTRICT.

BY DR. D. EDGAR FLINN.

Kilkenny is situated about 200 feet above the level of the sea, and is built on either side of the River Nore, which flows through the city in a south-easterly direction. The river is crossed by two bridges and divides the city into two parts. The principal buildings are St. Canice's Cathedral, St. Mary's Cathedral (Catholic), the Tholsel, with several fine churches and places of worship belonging to various denominations; County and City Prison, County Infirmary, Fever Hospital, County Asylum, and Military Barracks. Kilkenny Castle, the seat of the Marquis of Ormonde, is also within the borough boundary, and stands on an eminence overlooking the River Nore.

*Brief  
municipal  
history.*

There were at one period two Municipal Corporations—that of the English town, or City of Kilkenny, and that of Irishtown, or St. Canice. By the provisions of the Municipal Corporation Reform Act of 1843 they were amalgamated.

Kilkenny can lay claim to many ancient charters, the earliest dating from 1191. Charters were also granted by Richard II., Edward III., Henry IV., James I., Charles I., and James II. It was in the reign of James I. that Kilkenny was raised to the dignity of a city and county of a city. At one time there was a considerable trade carried on in the manufacture of blankets and coarse woollens, but this industry has latterly declined. Coal and black marble are raised in the neighbourhood of Kilkenny. There are two breweries, three woollen factories, agricultural implement works, all of which give employment. There is also a creamery of considerable size, which is apparently well managed and kept in a cleanly condition.

Kilkenny is governed by the Urban District Council, consisting of twenty-four members, which comprise the Mayor, six Aldermen, and seventeen Councillors. It is divided into two wards, viz., St. John's and St. Canice's. The urban district has an area of 921 acres, and the number of inhabited houses reaches to 2,481. The population is 11,048, and the valuation of the city £18,023. The Council derive an annual income from rents and rent-charges of £2,400. A revenue is also received from the fair green and markets and rents of artisans' dwellings, amounting to about £1,600 per annum. The city rates levied at the present time are 2s. in the pound for Poor Law and 3s. for general purposes.

A Provisional Order for electric lighting was obtained in 1892, but was never availed of, and was subsequently cancelled by the Board of Trade. At the present time the city is very indifferently lighted, the greater portion being lighted by oil lamps and the remainder with gas lamps. A Provisional Order was also obtained in 1895 for a water supply, and after many delays and vicissitudes a scheme is about being proceeded with to supply the city with a pure water supply. An Inquiry was held under section 15 of the

*Provisional  
orders.*

Public Health (Ireland) Act, 1896, on October 2nd and 3rd, 1900, and the Council are now engaged in promoting the scheme before mentioned. A Provisional Order has been obtained for the purposes of acquiring land for the storing of manure.

Geological  
formation.

Geologically considered, the urban district of Kilkenny stands upon a solid rock foundation—the upper division of the carboniferous limestone strata. Overlying the solid rock formation, and unevenly distributed in thickness on its eroded surface, is the limestone drift, in the form of gravel and sand, and above this again is the ordinary calcareous sub-soil of the country. Along the course of the River Nore through the urban district, the usual alluvium river wash occurs in irregular narrow deposits, while further up the river there is a very extensive shale and coal measure district lying on the north-east, and an extensive limestone district lying west and north-west of the city.

For a considerable number of years past the unsatisfactory condition of the water supply and sewerage of the city of Kilkenny was frequently brought under the notice of the sanitary authority, not only by their sanitary officers, but also by the Board's medical inspectors. In August, 1892, the medical inspector of the district stated that "in almost everything which is needed to make a town healthy Kilkenny is deficient; an inferior water supply, bad sewers, insufficient privy accommodation, dirty back-yards, and slaughter-houses of an unsavoury character, all combine to form a grave danger to the public health. Should any form of virulent disease visit the town, it would probably, under existing circumstances, cause appalling mortality."

The  
present  
water  
supply.

Kilkenny is at present supplied by water for drinking purposes from eighteen public pump-wells and six public surface springs or draw-wells. The greater number of these wells are shallow and situate in close proximity to sewers. The wells are all very imperfectly constructed, being for the most part shallow, built of loose dry rubble, and liable to contamination. The Borough Inspector stated at the Inquiry in October, 1900, that he had at various periods had occasion to send samples of water from the pump-wells for analysis, and they were all reported to be second class waters. I had an opportunity afforded me of seeing the original certificates of the analyses of practically all the public pump-wells. In every case the reports were unfavourable, and all showed evidence of more or less contamination of the water. I append a copy of the report of the Analyst on the specimens of water taken from three of the pump-wells situated in populous portions of the city, which shows that each water is evidently polluted, and proves how absolutely necessary is the provision of a pure water supply.

Sewerage  
system.

There is very little authentic information available as to the capacity and gradient of the various sewers. A very considerable portion of the city is without any sewerage system whatever, and it would appear that this area is an important one and has a large population. Where there are sewers they are all of the rubble-built square pattern, imperfectly constructed, and from the evidence given at an Inquiry held in October, 1900, under section 15 of the Public Health (Ireland) Act, 1896, it would appear that these sewers are seldom cleansed, and not until they are actually choked up with accumulations of sewage matter, and then the surface of the deposit is only cleared away. As there is no means of flushing these sewers, it is evident that large accumulations of sewage filth

must remain untouched and unremoved, and fetid accumulations of this nature must necessarily always be a source of grave danger to the health of the city.

Mr. Patrick Redmond, who has been a Sanitary Sub-Officer and the Borough Inspector for a period of thirty years, and who has had a considerable experience of the sanitary condition of Kilkenny during that long period, stated in evidence at the Inquiry, held in October, 1900, that the following localities were devoid of any sewers:—Abbey-street (a large part of), New Building-lane, Dublin-road (part of), Upper Walkin-street, Callan-road, Lower and Upper Barrack-street, Parnell-street, Rainger's-row, Cross River-road, Collonade, Maudlin-lane, Garden-row, Horse Barrack-lane, King-street, Wolfe Tone-street, James's-sconce, Maudlin-street, Widegap, Goal-street, Castleblunden-road, Ray's-hill, Michael's-lane, Park-street, Dean-street, Stephen's-street, Bishop's-hill.

The County Surveyor, Mr. A. M. Burden, stated at the Inquiry referred to above that he was personally aware of the *locale* of the main sewers in the town. He had seen them opened and had them cleansed out. They were nearly all rubble-built sewers, and he knew it to be a fact that the sewers ran close to a great many of the pump wells.

A Joint Report, signed by the Consulting Sanitary Officer, Dr. C. E. James, and the Medical Officers of Health for No. 1 and No. 2 districts of the city, Dr. J. A. Morris and Dr. J. B. Hackett, was forwarded last year to the Local Government Board. Reference in that report was made to:—

Joint report of medical officers of health.

1. The inferior character of the water supply.
2. The dangerous positions of the manure depôts.
3. The absence of a proper system of scavenging and filth removal.
4. The keeping of animals near dwelling-houses.
5. The insanitary condition of the slaughter-houses.
6. The condition of the graveyards and the dangerous proximity of some of the wells to them.
7. The absence of any method or means for disinfecting infected clothing and bedding.

The Medical Officers, in their report, stated:—

"We have persistently reported on these several points ever since the passing of the Sanitary Act of 1878, but hitherto without practical effect."

A formal complaint was also forwarded to the Local Government Board by Mr. E. N. C. Bor, as also a petition from some of the principal ratepayers and residents in Kilkenny, including the Marquis of Ormonde, the Bishop of Ossory, Dr. Crozier, the Rev. Mr. Aylward, Administrator, and others.

An Inquiry was subsequently held dealing with the questions above referred to.

The conditions under which a large proportion of the poorer classes are housed cannot be regarded as satisfactory. The majority of the dwellings contain from two to four rooms. Generally there is an evidence of dampness in the rooms, due in many instances to the absence of proper rain gutters, roofing evidently out of repair, and faulty spouting. In the more crowded and central parts of the town there is a large number of laneways where the space both in front and re-re of the houses is very limited. Some

Housing accommodation.

of this class of dwellings have small back-yards, the dimensions of which are from four to five feet in width to thirteen feet in length. In many yards, not much larger than these, pigs are kept. The back-yards as a general rule are not kept in a cleanly condition, and in some places accumulations of filth and house refuse are deposited and allowed to remain unremoved for much too long a time. There are a considerable number of houses without any back-yard accommodation whatever, and these are principally situated in High-street, King-street, Rose Inn-street, John's-bridge, Walkin's-escot, Watergate, Bull-alley, Evan's-lane, Cross-lane, William-street, Pennefeather-lane, Poyntz-lane, St. Canice's-place, Guard-lane. The drainage of all the back-yards is of a very unsatisfactory nature. Even in the more extensive back-yards it is quite common to see large holes and irregularities containing collections of stagnant and filthy water, and this insanitary condition will more or less to an extent continue to exist until provision is made for a proper and comprehensive system of sewerage and drainage. In the centre of the town and near one of the principal thoroughfares there is a network of laneways and alleys where there is a large population, and where the drainage is of the most imperfect description.

Public  
cleansing.

The public cleansing and scavenging, though better carried out than formerly, yet admits of improvement, more particularly in the narrower and smaller thoroughfares. The Council deserve credit for making efforts to cleanse the small back-yards attached to the poorer class of dwellings. The absence of privy and ash-pit accommodation in the smaller class of houses makes this duty the more imperative, and it would be very advisable if the Council would proceed one step further and adopt a general system of free domestic scavenging. Accumulations and deposits of filth and manure in small back-yards is fraught with great danger to the public health.

The "pail system" of refuse removal would be very applicable and prove a great benefit to Kilkenny. In this plan the excreta is received into movable receptacles, such as pails and tubs. In some places iron pails are used, in others the pails are made of oak and tarred over. Removal of the contents is greatly facilitated, and the removal should be carried out at least weekly. This system has proved of great benefit in towns similarly situated, and where there is a large percentage of houses with small and confined back-yards. The Council would do well to consider the adoption of such a system, the advantages of which are that it ensures the frequent removal of refuse and excrementitious matter in localities where the erection of privies and ash-pits cannot from want of space be properly erected, and prevents the accumulations of filth and organic matter in the poorer and more congested areas. A trial of this system over one section of the city as a beginning would probably commend its general adoption.

The habit of casting shop sweepings and refuse on the thoroughfares is one that should not on any account be permitted. This practice, though not as general as it used to be, still continues in some of the principal thoroughfares of the city. The scavenging staff is composed of fourteen labourers. Four horses and carts are also employed. This staff is augmented during the winter months, and they are all under the supervision of the Executive Sanitary Officer, and more immediately that of the Borough Inspector.

Prevalence of  
diphtheria.

An outbreak of diphtheria, which commenced in the end of December, 1898, continued to be more or less prevalent during the

years 1899 and 1900. In the year 1899 seventy-nine cases were admitted for treatment to the Kilkenny Fever Hospital. In 1900 there were no less than 110 cases treated at the Fever Hospital, and up to the end of March, 1901, twenty-three cases had been admitted. These numbers do not represent the total number of cases that occurred, but merely those that were admitted to the Fever Hospital. About twenty-five deaths were registered from diphtheria during this period. The disease was not confined to any particular area, but was generally prevalent throughout the city. The Medical Officers of Health attributed the outbreak in great measure to the many insanitary conditions that prevailed. In the Joint Report previously mentioned, these conditions are enumerated, and at the Inquiry held by Mr. P. C. Cowan, Chief Engineering Inspector, and myself, in October, 1900, the Consulting Sanitary Officer, Dr. James, and Dr. Morris, the Medical Officer of Health, in their evidence directly attributed the epidemic to the "general dirt and filth" of the town, and to the general want of sewerage drainage and water. It is probable that this outbreak would have been curtailed and stamped out had the provisions of the Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890, been in force, as in many cases I am informed medical aid was not sought for until the disease was well developed. The fear also of removal to hospital prevented the working classes obtaining prompt medical advice. The disease, no doubt, in the earlier stages of the outbreak, was also spread by the attendance at school of children from infected houses. At a later period the schools were, however, closed for some time.

There are thirteen registered slaughter-houses in Kilkenny, Slaughter-houses. which are inspected frequently by the Sanitary Sub-Officer, and also at intervals by the Executive Sanitary Officer. I have visited the majority of them and found in several instances that the flooring was defective and the ventilation insufficient. The slaughter-houses, as a general rule, are situated in confined spaces in the centre of congested areas, and this is particularly the case in one or two places, one slaughter-house being within a few feet of a dwelling-house and immediately under a sleeping apartment. As a rule the arrangements for the disposal of blood and offal are not satisfactory. The bye-laws regarding slaughter-houses require to be more rigidly enforced than they are at present.

There are about twenty-four cowsheds and dairies within the Cowsheds and dairies. urban district. Some of the cowsheds and yards are kept in a condition that show neglect, there being in many instances no proper drainage, while in other cases accumulations of manure in very large quantities are allowed to remain for long periods. In some dairy yards pigs are kept in close proximity to the cow byres, and serious danger to milk consumers is incurred by allowing pigs to be kept in confined dairy yards from which milk is distributed to the public. There are no regulations in force under the Dairies, Cowsheds, and Milkshops Order, and this fact accounts for the general filthy condition in which I found the cowsheds and dairy yards that I visited. The drainage of all the yards require to be improved. There is, I understand, a rule laid down by the Council that manure should be removed at stated and frequent intervals from the dairy yards, but it does not appear to be observed or carried out as stringently as it should be.

There are twenty-two bakeries, which are inspected, I am informed, occasionally. Bakeries

Common  
lodging-  
houses.

There are ten registered common lodging-houses, which are inspected regularly, I am informed. I visited two or three of them, and they appeared to be kept in an orderly and cleanly manner. Several of them, however, had no notice board affixed to the premises, and the Council would do well to require the keepers of all common lodging-houses to comply strictly with the provisions of section 90 of the Public Health Act, 1878, in regard to this matter. There are several unregistered common lodging-houses, I understand, in the urban district, and steps should be taken to ensure that all common lodging-houses should be registered.

Artizans'  
dwellings.

At several intervals since 1887 the Council erected a number of dwellings for the working classes. Altogether about eighty houses of this class have been built in various parts of the borough, viz., Parnell-street, John's-quay, Wolfe Tone-street, Thomas-street, and The Lake. These houses on the whole are of a good class and are comfortable. In the houses, however, that have been recently erected no provision appears to have been made for drainage, and in Maudlin-street, where the Council repaired a block of houses (sixteen in all) for the accommodation of the working classes, privy or ash-pit accommodation was not provided in a number of cases.

Sanitary  
adminis-  
tration.

The Consulting Sanitary Officer is Dr. C. E. James, who receives a salary of £20 a year, and furnishes reports to the Council as occasion requires. There are two Medical Officers of Health, viz., Dr. J. B. Hackett and Dr. J. A. Morris. These gentlemen furnish reports frequently to the Council, are all keenly alive to the sanitary wants of the city, and never fail to advise the Council when necessary.

The Executive Sanitary Officer is Mr. P. O'Grady, who devotes his whole time to the duties of his office, and receives a salary of £50 per annum. Mr. O'Grady also superintends the sanitary staff generally.

The senior Sanitary Sub-Officer is Mr. P. Redmond, who is also the Borough Inspector, Inspector under the Food and Drugs Act, and Markets and Fair Green Inspector. The total salary received by this officer is £82 per annum. There is also a second Sanitary Sub-Officer, Mr. J. Delaney, who receives a salary of £58 a year. This latter officer, in addition to his other duties, inspects the common lodging-houses and slaughter-houses. The Executive Sanitary Officer as well as the Senior Sanitary Sub-Officer furnish weekly reports to the Council, detailing the work performed during the previous week. In some instances the Council make orders for the abatement of nuisances, &c., but apparently do not institute proceedings under the Public Health Acts to enforce their orders as frequently as they might. The Executive Sanitary Officer has only been in office since the early part of this year. He appears to be active, and capable and willing to discharge his duties. The Senior Sanitary Sub-Officer, who has had a long experience of Kilkenny, is thoroughly conversant with his responsible duties, and earnestly endeavours to carry them out in a satisfactory manner, though sometimes it may be under difficulties.

Appoint-  
ment of  
Borough  
Surveyor.

The appointment of a Borough Surveyor and Engineer would not only appear to be desirable but very necessary in an urban district of the size and importance of Kilkenny, and his whole time should be devoted to the discharge of the duties of his office. The variety of questions that arise as to streets, buildings, sewerage and drainage, public cleansing and scavenging, repairs to houses, &c., require the attention of a person having skilled knowledge, and who could advise the Council.

There are eight graveyards situated within the urban district, some being in the centre and most thickly populated portions of the city, and quite close to inhabited dwelling-houses.

I visited some of these graveyards, and from their appearance I think the Council should consider the advisability of procuring ground for burial purposes in a place convenient to but outside of the city.

Notices served for abatement of nuisances during the year,	172	Summary of public health administration.
Prosecutions under the Public Health Acts,	12	
Number of sanitary inspections of yards and premises,	2,538	
Number of reports by Sanitary Sub-Officers,	123	
Privies and ashpits cleaned,	2,305	
New privies and ashpits constructed,	32	
New drains laid,	29	
Main sewers cleaned,	6	
Back-yards of poorer dwellings concreted,	14	

There are bye-laws in force for Kilkenny under the Public Health Acts, which were confirmed by the Local Government Board on the 24th January, 1896. These bye-laws deal with the following matters:—

1. Cleansing of premises.
2. Nuisances. Keeping of animals, &c.
3. Common lodging-houses.
4. New buildings.
5. Slaughter-houses.
6. Houses let in lodgings (other than common lodging-houses).

The bye-laws regarding the keeping of animals require to be more strictly enforced.

A modern steam disinfecting apparatus is about to be erected, which will no doubt prove of benefit. It is very much needed.

#### RECOMMENDATIONS.

The questions most urgently requiring the attention of the sanitary authority would appear to be as follows:—

- (1.) The provision of a sufficient supply of wholesome water, and a proper system of sewerage and drainage.
- (2.) The introduction of the "pail" or other system for the removal of refuse, &c., and the provision of a "refuse destructor."
- (3.) The adoption of the Infectious Disease (Notification) and (Prevention) Acts.
- (4.) The adoption of regulations for the management of cow-sheds, dairies, and milkshops.
- (5.) The provision of a new cemetery outside the city boundary; and
- (6.) The appointment of a Borough Surveyor.

I have to acknowledge my deep indebtedness to the Consulting Sanitary Officer, the Medical Officers of Health, and to the Executive Sanitary Officer, and the Borough Inspector for their attention and the assistance they afforded me during the course of my inquiries. I also desire to thank Mr. M'Henry of the Geological Survey of Ireland.

D. EDGAR FLINN,  
Medical Inspector.

September, 1901.

(Copy.)

City Laboratory, 17, Castle-street, Dublin,  
24th day of December, 1895.

Composition of five specimens of water, submitted to me for the purpose of analysis by Inspector P. Redmond, Kilkenny.  
One Imperial gallon (70,000 grains) contains in grains:—

	No. 1. Thelsol.	No. 2. Parade.	No. 3. Mouldin-st.
Colour, ... ..	Almost none.		
Odour at 100° F., ... ..	Nothing peculiar.		
Total Solid Matters, ... ..	102.000	59.000	22.500
Including:—			
*Albuminoid Ammonia, ... ..	0.007	0.017	0.006
*Soluble Ammonia, ... ..	0.102	0.005	0.001
*Nitrogen in Nitrites and Nitrates, ... ..	3.636	2.433	3.033
Equal to Nitric Acid, ... ..	16.317	9.381	13.671
Chlorine, ... ..	11.723	4.300	7.057
Equal to Sodium Chloride, ... ..	19.323	8.035	11.629
Phosphoric Acid, ... ..	Faint trace.	Faint trace.	Faint trace.
Hardness, ... ..	47.6°	33.1°	40.9°

These waters are all bright and clear. They deposit very slight sediments. They were fermented with pure sugar for a fortnight at a temperature of 80°. No. 1 became faintly clouded, No. 2 decidedly clouded, and No. 3 slightly more so than No. 1. Under similar conditions the purest waters remain unaltered, whilst bad ones become more or less turbid and opaque from development of fungi (mounds) from spores, which are always in polluted water.

The best points in these waters are their colour and flavour. They are all too hard for potable waters, No. 1 being excessively so. They cannot be obtained from pure sources, seeing that they contain such large amounts of nitric acid. No. 2 is of very doubtful purity. I should not like to drink it. The others are tolerably, but not very, pure.

CHARLES A. CAMERON.

\* In fresh sewage, the nitrogen present is chiefly in the form of albuminoid substances, but it speedily becomes, in part at least, ammonia (a compound of nitrogen with hydrogen). After some time the ammonia oxidises successively into nitrous and nitric acids. The presence of large quantities of nitrous acids or nitric acid in water is a suspicious circumstance, as these substances are formed from nitrogenous bodies; they are, however, not noxious, and nitric acid, in moderate amounts, often occurs in good water, when hard. When water contains more than 0.005 grain of albuminoid ammonia per gallon, it is considered not to be of the purest quality; 0.01 grain per gallon is excessive, and the higher the proportion beyond that point, the more impure the water is. The most dangerous ingredient of water is albuminoid matter of animal origin. Dark coloured peaty waters often, however, contain much albuminoid nitrogen derived from comparatively harmless vegetable matters. Albuminoid ammonia is least objectionable in peaty waters.



## KILLARNEY.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE KILLARNEY URBAN  
DISTRICT.

BY DR. T. J. BROWNE.

Killarney Urban District comprises an area of 1,839 acres. The population at the Census of 1891 was 5,510, which was over 1,000 less than at the Census of 1881. The number of occupied houses is about 820. The rateable valuation of property is £8,736, and the liabilities, £7,278. The total rates levied during the past year amounted to 9s. 4d. in the pound.

General  
Description.

Killarney is a favourite tourist resort owing to the fine scenery in the neighbourhood, and during the summer and autumn months there is a large influx of visitors. Weekly markets and monthly fairs are held in the town, which are well patronised by the farmers from the surrounding country, and these constitute the chief support of the town, there being no local industries of any consequence.

The better-class houses are ranged on either side of the four principal streets of the town, and are, for the most part, fairly well-circumstanced as regards sanitation. The poorer-class population is housed in lanes off the principal streets. These lanes number thirty-two, and were, I am informed, at one period the sites of gardens connected with houses in the main streets. As a rule, these lanes are very narrow, with houses on both sides, which are, generally speaking, one-storey buildings, of a very poor class, deficient in air space, ventilation, and lighting. Many are unprovided with back yards, and where these exist they are usually to be found in a most insanitary state from defective drainage. Keeping of pigs and accumulations of filth, and overcrowding in this class of houses is common, and domestic cleanliness is, in many instances, neglected. There is a general absence of sanitary conveniences, the excrementitious matter and filth of all descriptions being usually deposited on the roadway, near the entrance to the laneways. It would be difficult to adequately describe the insanitary condition of these laneways, and the consequent misery and suffering entailed on the inhabitants, particularly from diseases of the tubercular class, which are extremely prevalent, and are mainly due to the insanitary conditions under which the poorer classes live. A great necessity exists for the provision of healthy dwellings for the working classes resident in the district. An effort in this direction is being made by the Sanitary Authority, but the small number of houses which it is proposed to erect will have little effect in remedying the existing evil.

Dwellings.

Water  
supply.

The district is supplied with water, on the gravitation system, from mountain streams on Mangerton and Fore Mountains, the water being conveyed from the intake to the reservoir in six-inch pipes, and from thence to the town in eight-inch pipes. The supply to the reservoir is insufficient in consequence of the supply pipe being too small. This causes a reduced pressure in the water mains supplying portions of the district on the higher level, to which the supply is intermittent and insufficient. It is proposed to lay a second six-inch pipe from the intake to the reservoir, which, it is hoped, will provide an abundant supply of water to the entire district. The water from this source is filtered, and is of good quality, the houses in the principal streets and public institutions being provided with domestic supplies. In the lanes there are fountains or stand-pipes.

The other sources of water supply in the district are—Ballycasheen well (the analyst's report, annexed, on this water is unfavourable), Welsh's-lane well, and two public pumps. The water from these latter sources is reported to be of fairly good quality.

Sewerage  
and  
drainage.

The principal streets—High-street, New-street, Main-street, and College-street, also Old Market-lane, New Market-lane, Well-lane, Brewery-lane, and Gas-lane—are sewered, some of the sewers being piped, and others constructed of rubble masonry. The outfall of the sewerage system is into a small stream flowing through Lord Kenmare's demesne, and discharging into the Lower Lake, this stream being covered in its course as far as the lake. The lanes off High-street, on the west side, are drained by surface channels into a field owned by Mr. M'Donagh, the drainage eventually finding its way into the sewer in New-street. The remaining lanes, which are not sewered, are drained by surface channels, which discharge into gully-traps placed on the main sewers at the entrance to the lanes. These surface channels are usually in a very filthy state, being the receptacles for house slops and refuse of all kinds, and the same condition prevails in the back yards attached to the houses, where the only provision for drainage is surface channels from yard to yard. It is evident that nothing short of a proper system of piped sewers in each of the lanes will suffice to render the drainage satisfactory.

Excre-  
ment and  
refuse dis-  
posal.

About 300 of the houses are provided with water-closets, and in about 100 more the excrement and refuse are disposed of by means of midden privies. The remaining 500 houses are unprovided with sanitary conveniences, the refuse, &c., being deposited on the surface of the back yards, where these exist in connection with the houses, or on the public streets, the latter means of disposal being the rule. The Sanitary Authority do not undertake the domestic scavenging, but employ six men with one horse and cart in cleansing the streets and laneways. Each street and laneway is cleansed about once in each week, the accumulations of refuse, &c., being very considerable before being removed. This is particularly the case in the back yards, which are only cleaned out at very infrequent intervals, and very commonly the refuse, &c., has to be removed through the dwelling-houses, there being no back entrance to the yards. The scavenging, both domestic and general, is very defective. The only remedy appears to be for the Sanitary Authority to undertake the domestic scavenging, and to require each house to be provided with covered receptacles for ashes and refuse, which should be emptied as often as necessary. The site of the manure dépôt is objectionable, being close to the public road, and not far distant from dwellings.

There is a public abattoir, the property of the Sanitary Authority. Slaughter-houses. This is largely availed of, but it is not in a satisfactory state of repair, and cleanliness is not sufficiently observed. Slaughtering is also carried out in three private slaughter-houses, none of which are suitable, being either defective in construction, too close to dwellings, or badly drained. The private slaughter-houses are not kept in a cleanly state; manure and offal are accumulated in their vicinity.

There are about six common lodging-houses in the district; none of them are registered or suitable for the purpose. They are badly kept, and are not provided with sanitary conveniences or water supplies. Common lodging-houses.

There are no dairies in the district; the milking utensils are usually kept in the dwelling-houses. There is a milk-market, but no shops for the sale of milk. Dairies, cowsheds, and milk-shops.

There are sixteen cowsheds in the district. The sheds are, with one or two exceptions, badly constructed, close to dwellings, situate in confined yards, badly drained, and are kept in a filthy state. The manure is allowed to accumulate in large quantities close to the sheds.

There are about 100 piggeries in the town, nearly all of them in very small yards, close to the dwellings, or built right up to them, and under the windows. They are usually very defectively drained and kept in a very filthy state. Manure is accumulated in their vicinity. Keeping of animals on premises.

These piggeries constitute a serious source of danger to the public health. Horses and donkeys are also kept on premises so as to give rise to nuisances.

The Killarney Urban District Council meet regularly on each Friday. Orders are made on the reports of the Medical Officers of Health, and enforced except in the case of piggeries, which latter form of nuisance the Medical Officers of Health have ceased reporting on in consequence. Sanitary administration.

The Sanitary Staff consists of:—

Sanitary staff.

Mr. Healy, Executive Sanitary Officer.

Dr. MacSweeney, Medical Officer of Health.

Dr. O'Sullivan, Medical Officer of Health.

Mr. Duncan Scott, C.E., Town Surveyor.

Mr. J. Breen, Sanitary Sub-Officer.

During the past year Dr. MacSweeney furnished fifty-two reports to the Council, and Dr. O'Sullivan, thirty-eight. Mr. Breen furnished 100 reports to the Medical Officers of Health. He keeps a diary of the sanitary work which he performs, and reports to each meeting of the Council. He is an efficient officer and zealous in the discharge of his duties.

During the same period forty notices for the abatement of nuisances were served, and prosecutions were instituted in six instances.

The County Fever Hospital is situate in the district, and is available for the reception of patients suffering from the various forms of zymotic disease. There is a suitable ambulance at the Workhouse for the conveyance of infectious cases to hospital, which is also available, but there is no disinfecting apparatus provided, which is so essential for the efficient disinfection of infected articles. Up to the present all such articles have had to be destroyed and replaced at the expense of the ratepayers. Hospital accommodation for infectious diseases.

**Adoptive Acts, bye-laws, &c.** The Infectious Disease (Notification) Act, 1889, is in force in the district.

The only bye-laws framed by the Sanitary Authority are those relating to common lodging-houses, and these are not enforced.

Regulations under the Dairies, Cow-sheds, and Milk-shops Order have not been adopted.

**Recommendations.** The matters which seem more particularly to call for the attention of the Sanitary Authority are as follows:—

- (1.) The better housing of the working classes.
- (2.) The closing of insanitary dwellings, and the prevention of nuisances arising from overcrowding, keeping of animals on premises, &c.
- (3.) The remedying of defects in the water supply. Ballycasheen well water having been unfavourably reported on by Analyst, should be closed.
- (4.) The provision of a proper system of sewerage in the laneways, and requiring all premises to be connected with the sewerage system.
- (5.) The domestic scavenging of the district should be undertaken by the Sanitary Authority. Each house should be provided with movable covered receptacles for ashes, refuse, &c., and emptied as often as requisite. The midden privy system should be abolished in small confined yards, and the pail system or water-closets substituted.
- (6.) A more suitable site for a manure dépôt should be obtained.
- (7.) Slaughtering of animals should be prohibited except in the public abattoir, or on suitable premises.
- (8.) Common lodging-houses should be registered when found suitable, and the bye-laws enforced.
- (9.) Regulations under the Dairies, Cow-sheds, and Milk-shops Order should be adopted and enforced.
- (10.) A disinfecting apparatus should be provided.
- (11.) Bye-laws under the Public Health Act, dealing with the following matters, should be adopted and enforced:—

- (a.) Cleansing of footways, &c.
- (b.) Removal of refuse.
- (c.) Nuisances arising from keeping of animals, &c., on premises.
- (d.) Slaughter-houses.
- (e.) New buildings.
- (f.) Houses let in lodgings.
- (g.) With respect to the closing of buildings unfit for human habitation.

THOMAS J. BROWNE,  
Medical Inspector.

February, 1901.

## KILLINEY AND BALLYBRACK.

### REPORT ON THE SANITARY CIRCUMSTANCES AND ADMINISTRATION OF THE KILLINEY AND BALLY- BRACK URBAN DISTRICT.

BY DR. T. J. BROWNE.

The Urban District of Killiney and Ballybrack is situate in the General County of Dublin on the sea coast, and is bounded on the north by the Dalkey Urban District, and on the south and west by the Rath-  
down No. 1 Rural District. The district is of a very hilly nature, rising rather abruptly from the seashore to Killiney Hill, which has an elevation of 500 feet. The villages of Killiney, Ballybrack, and Loughlinstown, in the latter of which the Rathdown Union Workhouse is situate, are comprised in the district. The traders and poorer classes reside in the villages, whilst the remainder of the district is, for the most part, occupied with villa residences, having extensive grounds. The area of the district is 1,017 statute acres, and the population 2,649, which includes the inmates of the Rathdown Workhouse. The valuation for rateable purposes is £12,003 10s., and the total rates levied amount to 5s. 9d. in the pound.

The houses occupied by the poorer classes in the villages of Killiney, Ballybrack, and Loughlinstown, particularly in the latter village, are of a poor description, defective in construction, ventilation, and lighting, imperfectly drained, and not kept in a cleanly state. The privies and ashpits, which in many instances are common to several houses, are badly situated and kept in a filthy state. In Loughlinstown village very few of the houses are provided with sanitary conveniences. Back yards, where they exist, are unpaved and undrained.

The Sanitary Authority have recently provided twenty-eight houses under the provisions of the Housing of the Working Classes Acts at a cost of £5,850. These houses are of a suitable class, and are kept in a good sanitary state.

The total number of inhabited houses in the district is about 430. The water supply of the district is obtained from the Vartry, under agreement with the Corporation of Dublin. It is pumped to the higher levels, and is sufficient in quantity and of good quality. The better-class houses have domestic supplies, and the poorer are supplied from stand-pipes placed in convenient situations.

All the better-class houses are drained into covered cesspits, which are said to be, in many instances, of faulty construction, permitting of leakage into the surrounding earth, and are not cleaned out sufficiently often. The Sanitary Authority propose providing a cesspool exhauster,\* at a cost of £300, similar to those in use at Rochester, Bournemouth and other places. It is claimed for this exhauster

\* An exhauster has since been provided.

(Nurryweather's) that a great saving in time and expense is effected, and that the cesspits are completely emptied without offensive smells or splashing of the contents about.

About fifty per cent. of the houses have no system of drainage excepting surface channels. In the village of Killiney and Ballyhrack these channels communicate with covered rubble drains, which discharge into a stream. An improved system of drainage is required for the three villages above mentioned.

Excrement and refuse disposal.

The excrement, as already stated, is disposed of by cess-pits and privy middens, which are cleaned out at irregular intervals. The privies are generally too close to dwellings, and are kept in a filthy state, one privy often serving for several houses.

The domestic scavenging is undertaken by the Sanitary Authority, and is charged for at a fixed scale of fees, ranging from 1s. to 5s. for each cleansing, according to the class of house. Ash-bins are in use in a good many instances, and are emptied once weekly by the Scavenging Staff at an annual charge of 10s. per house. The refuse, &c., is disposed of to the farmers in the neighbourhood, who use it for manuring their lands. The domestic scavenging is not very satisfactorily done.

Slaughter-houses.

The only slaughter-house in the district is situate in the village of Ballyhrack. It is in close proximity to a dwelling-house, but as regards construction, ventilation, and drainage is satisfactory. The manure and offal are removed daily and cleanliness is observed.

Common lodging-houses.

There are none in the district.

Dairies, cowsheds, and milkshops.

There are five cow-sheds in the district. As a rule, they are fairly well kept, constructed, and kept clean, but are too close to dwellings. The drainage in one or two instances is faulty, and manure is permitted to accumulate to too great an extent in the vicinity of the sheds.

There are no dairies, properly speaking, in the district, the milk being sent direct to the customers. There are two milk-shops; both are in the dwelling-houses, but in separate apartments, and are kept clean. Nothing is sold but milk.

Sanitary Administration.

The Public Health Committee hold regular monthly meetings. The requisite orders are made on the reports of the Medical Officer of Health and Sanitary Sub-Officer, and enforced when necessary.

Sanitary staff.

Mr. R. Cunningham, Executive Sanitary Officer.

Dr. Wright, Medical Officer of Health.

John Montgomery, Sanitary Sub-Officer and Inspector of Dairies.

During the past year the Medical Officer of Health furnished eight reports to the Sanitary Authority, and the Sanitary Sub-Officer furnished sixteen reports, and made 1,156 inspections of yards and premises, and 312 inspections of cow-sheds and milk-shops; 448 premises were scavenged, twenty-three houses lime-washed, seven houses disinfected, and a number of articles of bedding, clothing, &c., removed to the disinfecting chamber at the Workhouse for disinfection. Fourteen cases of infectious disease were notified during the past year.

Hospital for infectious diseases.

The Rathdown Workhouse Fever Hospital, containing fifty beds, is utilised for the treatment of patients suffering from diseases of an infectious nature, who reside in the district. There is a suitable ambulance and disinfecting apparatus at the hospital.

Bye-laws relating to the following matters have been adopted, viz. :—

Bye-laws  
and regula-  
tions in  
force.

- (1.) The cleansing of footways and pavements.
- (2.) The removal of house refuse and the cleansing of cesspools.
- (3.) Nuisances.
- (4.) Slaughter-houses.
- (5.) Common lodging-houses.
- (6.) New streets and buildings.
- (7.) Telephones, telegraph, &c., wires.

The bye-laws are not strictly enforced as regards the removal of refuse and the cleansing of privies, ashpits, and cesspools. Regulations respecting dairies, cow-sheds, and milk-shops are in force. As regards the ventilation, drainage and cleansing of the cow-sheds, the regulations are not strictly complied with.

The matters which most urgently call for the attention of the Sanitary Authority are as follows, viz. :—

Recom-  
menda-  
tions.

An improved system of drainage for the villages of Killiney, Ballybrack and Loughlinstown.

The abolition of the privy middens, and the substitution of the pail system or dry-earth closets.

More careful attention to the domestic scavenging, and the enforcement of the bye-laws and regulations.

The insanitary dwellings should either be placed in a sanitary state or detenanted.

THOMAS J. BROWNE,

Medical Inspector.

December, 1900.

## KINGSTOWN.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE KINGSTOWN  
URBAN DISTRICT.

By Dr. T. J. BROWNE.

General  
description.

Kingstown Urban District is situate on the south shore of Dublin Bay, in the Poor Law Union of Rathdown, and is distant about five miles from Dublin. The district comprises Dunleary, Kingstown proper, Glasthule, and portion of Monkstown, and has an area of 1,462 acres. The population is locally estimated at 16,491. According to the Census returns of 1891 the population at that time was 17,183, so that, if this estimate is correct, there has been a considerable decrease during the past nine years.\* The death-rate during the year 1900 was 23·2 from all causes, and 1·6 from the principal zymotic diseases per 1,000 of the population. The rateable value of the district is £75,772. The total rates levied amount to 7s. 6d. in the pound.

The geological formation of the Kingstown east and west portions of the district is granite, oldest formation of igneous rock, impervious and close to the surface. The Monkstown portion of the district is the same formation, with, in some places, a deep alluvial deposit.

The district is largely residential, and for the most part populated. It is a seaside resort during the summer months. There are no industries with, perhaps, the exception of fishing. About one-third of the entire population may be classified as poor.

Dwelling  
accommodation.

There is considerable crowding of dwellings on area, particularly in the courts and laneways, of which there are 121 in the district, with 1,007 houses of the poorer class. Nearly all of these houses are one-storey buildings, containing one or two rooms each, structurally defective, and, in many instances, in bad repair. A considerable proportion are barely fit for habitation, and many are quite unfit. (A list of the courts in the district, number of houses in each, and particulars as to sanitary accommodation is annexed to the report.) One water-closet, or privy, and ashpit commonly serves for six or more houses. These are, as a rule, situate close to the dwellings, and are not kept in a cleanly state. In many instances there are no back yards to the houses, and they are built back to back in close confined courts, shut out from sunlight and air. The worst of these courts are to be found off Patrick-street, George's-street, Mulgrave-street, Cumberland-street, Cross-avenue, Paradise-street, Clarence-street, Turner's-avenue, and Callaghan's-lane.

There are 355 tenemental dwellings in the district. These dwellings are generally overcrowded, and are not kept clean or in a good

\* According to the Census Returns of 1901 the population is now 17,393.



state of repair. A family occupies each room, the rooms being small and deficient in ventilation and lighting. In fact, the slum property in Kingstown is of the worst description, and fit for nothing except demolition. The question of the housing of the working classes in Kingstown Urban District is one which must sooner or later engage the attention of the Sanitary Authority. The leases of most of this class of property will expire in two or three years, when, in all probability, the houses, or a large number of them, will be demolished. The sooner, therefore, the better the question of providing dwellings for the working classes is considered. The houses occupied by the better class are, I am informed, all provided with water-closets, properly drained, and have domestic water supplies.

The Corporation of Dublin supply the Kingstown Urban District Water with water from the Vartry system, at a charge of 5d. in the pound supply on the valuation of the district. The supply is conveyed in 15-inch pipes from the main at Stillorgan, and distributed through all the inhabited parts of the district. In the poorer localities there are fountains and stand-pipes. The water supply is ample for the requirements of the district; twenty gallons per head per day is the quantity contracted for. The quality of the water is reported to be good.

Nearly three-fourths of the sewers in the entire system of sewerage are constructed of glazed earthenware pipes, which are said to be properly laid and jointed. The remaining fourth is constructed of rubble masonry, bricks and unglazed pipes, which are not properly jointed. The main sewers are ventilated through man-hole gratings in the streets. The house connections are formed of 6-inch pipes with disconnecting traps ventilated on the house side. The soil-pipes are also ventilated. Every house in the district valued at £12 and above is drained in this manner, those of a smaller valuation have no house drains, but have gully-traps in the yards, or in some convenient place, for the reception of house slops, &c. The sewerage of the greater portion of the district is on the gravitation principle. A portion of the sewage of Glashule Ward is pumped into the gravitation main sewer at top of Eden-road. The pumping power is said to be insufficient, but the defect is receiving the attention of the surveyor. The outfall of the sewerage system is into the sea at a point three-quarters of a mile from the beach, where there is a depth of water at low tide of twenty-five feet. The sewage is impounded in a large tank close to the beach, and discharged twice daily an hour after high water. As far as I could observe, there was no pollution of the foreshore.

With the exception of some of the poorer localities, the excrement is disposed of on the water-carriage system. In some of the poorer localities privy middens constitute the means of disposal. As a rule, one privy serves for several houses. The privies are connected with ashpits, and are, for the most part, kept in a foul and filthy state. Their construction is defective, and soakage into the surrounding soil takes place. They are usually constructed close to dwellings.

The Sanitary Authority undertake the domestic scavenging. Most of the houses are provided with ashbins, which are emptied daily. Ashpits are cleaned out on notice being given to the Sanitary Officers. Twenty-four men with eight horses and carts are employed constantly at this work. All refuse of every kind is removed to the nuisance depot at Rochestown, which is situate in the Rathdown Rural District. The site of the manure depot is a disused brick-field adjoining

the public road, and close to occupied dwellings. It is about two miles from the centre of the Kingstown Urban District. The refuse is utilised for filling up a deep pit, which was formed in removing earth for brick-making. The site is an objectionable one. A refuse destructor should be provided and all refuse disposed of in this manner. In connection with the domestic scavenging of the district, it is to be noted that since this work was undertaken by the Sanitary Authority in 1896, the zymotic death-rate has declined by one-half.

**Slaughter-houses.** There are six licensed slaughter-houses in the Kingstown Urban District. They are all situated in populous localities and close to inhabited dwellings. With two exceptions, I found them clean and well kept, and the manure and offal regularly removed. The drainage, ventilation, and construction generally was satisfactory, but the sites were in every instance objectionable. There is no provision in the bye-laws regulating the distance of slaughter-houses from occupied dwellings.

**Common lodging-houses.** There are several common lodging-houses in the district, but none are registered, as they do not conform to the bye-laws. I visited some of these houses, and found them in a filthy and dilapidated state and generally overcrowded. These houses constitute a serious danger to the public health. Registration should be insisted on where houses are found suitable, and the bye-laws enforced.

**Dairies, cowsheds, and milkshops.** There are about forty dairies, cowsheds, and milk-shops in the district. The cowsheds are, generally speaking, situate in populous localities and close to dwelling-houses. The sheds are, for the most part, defectively constructed and badly drained. Manure is permitted to accumulate in their vicinity, and, in a few instances, pigs are kept close to the sheds. Cleanliness is not, as a rule, sufficiently observed. The regulations as to cubic space and ventilation are not enforced.

The dairies and milk-shops are kept clean, and are in the dwelling-houses, but in separate apartments. The greater portion of the milk supply of the district comes from outside sources.

**Sanitary Administration.** The Kingstown Urban District Council consists of twenty-one members. The Public Health Committee meets regularly once weekly. Orders are made on the reports of the Medical Officers of Health and Sanitary Sub-Officers, and enforced when not complied with.

**Sanitary staff.**

Mr. J. Donnelly, Executive Sanitary Officer.
Dr. J. Byrne Power, Medical Superintendent Officer of Health.
Dr. J. F. Newland, Medical Officer of Health.
Dr. R. J. O'Flaherty, do.
Mr. J. Berry, c.e., Borough Surveyor.
Mr. P. Carroll, Superintendent of Scavenging.
Mr. J. Daly, Sanitary Sub-Officer.
Mr. W. Walker, Sanitary Sub-Officer.

The Medical Superintendent Officer of Health and the Medical Officers of Health furnish reports at each meeting of the Public Health Committee. The Sanitary Sub-Officers report to the Public

Health Committee and to the Medical Officers of Health matters affecting injuriously the public health, and discharge their duties in a satisfactory manner.

Notices served to abate nuisances, . . . . .	2,005	Summary of sani- tary work during past twelve months.
Prosecutions for neglect to comply with notices, . . . . .	125	
Houses, yards, and premises inspected, . . . . .	20,330	
Houses limewashed, . . . . .	1,626	
Houses disinfected, . . . . .	92	

There is no special isolation hospital in the district, but cases of typhus and enteric fevers are admitted to the Monkstown and St. Michael's Hospitals, which are situate in the district. Other forms of infectious disease are sent to Rathdown Workhouse Fever Hospital. The Sanitary Authority possess an efficient disinfecting apparatus, also a suitable ambulance for the conveyance of patients suffering from infectious diseases to hospital. Hospital accommodation, &c.

Bye-laws relating to the following matters are in force, viz.:—

- (1.) The cleansing of footways and pavements.
- (2.) The removal of house refuse.
- (3.) The cleansing of cesspools, &c.
- (4.) The removal of nuisances.
- (5.) Slaughter-houses.
- (6.) Common lodging-houses.
- (7.) New streets and buildings.

Regulations respecting dairies, cow-sheds, and milkshops are in force in the district, but compliance with these regulations is not strictly enforced. The Infectious Disease (Notification) and (Prevention) Acts have not been adopted, although Dr. Power, the Medical Superintendent Officer of Health, has frequently urged on the Sanitary Authority the desirability of adopting these Acts. This is a serious reflection on the sanitary administration of the district. I believe the chief objection to the adoption of these Acts is the publicity which might possibly result in the occurrence of a case of infectious disease in the district, and the probable interference with trade. Even if such were the case, such considerations should not weigh with the Council where the welfare and protection of the community are so deeply concerned, it being of the highest importance that the earliest information as to the occurrence of disease of an infectious nature in the district should be furnished to the Sanitary Authority and their responsible officers, so that the requisite preventive measures may be promptly carried out. Some cases of enteric fever, diphtheria, measles, scarlatina, and whooping-cough occurred during the year. The usual preventive measures were adopted under the supervision of the Sanitary Sub-Officers.

The district is lighted by 450 gas lamps. The lighting is done by Public contract with the Gas Company. lighting.

## Roads.

The Council have control of the roads, streets, &c., in the district. The principal streets are paved with setts. Others are macadamized, and rolled with steam roller. They are, generally speaking, in good order. The footpaths are nearly all flagged.

## Recommendations.

The matters most urgently demanding attention from the Sanitary Authority are as follows:—

The clearance of the worst slum areas, and the provision of healthy dwellings for the working classes.

The abolition of the midden privy system, and the substitution of the water-carriage, or pail, systems. Each house should be provided with separate closet accommodation, as, where closets are used in common by several families, they are invariably kept in a filthy state.

Common lodging-houses should be registered, regularly inspected, and the bye-laws relating thereto strictly enforced.

The question of providing a public abattoir and refuse destructor should be considered.

The sewers, where defective, should be attended to.

The enforcement of the regulations respecting dairies, cow-sheds, and milk-shops should be strictly carried out.

I desire, in conclusion to express my best thanks for the information and assistance afforded me by the various Officers of the Kingstown Urban District Council.

THOMAS J. BROWNE,

Medical Inspector.

December, 1900.

## LIST OF COURTS AND TENEMENT HOUSES.

Name of Court.	Number of Houses.	Sanitary Accommodation.
<b>PATRICK STREET.</b>		
McGillick's-court, ... ..	4 houses, ...	1 W.C., ashpit.
Finnegan's-court, ... ..	4 houses, ...	1 W.C., 1 bin.
McCormick's-court, ... ..	3 houses, ...	1 W.C., ashpit.
Burne's-court, ... ..	6 houses, ...	1 W.C., 1 bin.
Needham's-court, ... ..	14 houses, ...	1 W.C., 2 bins.
Stephen's-court, ... ..	6 houses, ...	1 W.C., 1 bin.
Murphy's-court, ... ..	4 houses, ...	1 W.C., 1 bin.
Moran's-court, ... ..	4 houses, ...	1 privy and ashpit.
Martin's-court, ... ..	2 houses, ...	2 W.C's., 1 ashpit.
Syrie's-court, ... ..	14 houses, ...	1 W.C., 1 bin.
Synod's-court, ... ..	5 houses, ...	1 W.C., 1 bin.
Reid's-court, ... ..	4 houses, ...	1 W.C., 1 bin.
Hall's-court, ... ..	3 houses, ...	1 W.C., 1 bin.
Carroll's-court, ... ..	3 houses, ...	1 privy and ashpit.
Bogan's-court, ... ..	8 houses, ...	1 W.C., 1 bin.
Diamond-place, ... ..	10 houses, ...	4 W.C's., 1 ashpit.
Baxter's-court, ... ..	5 houses, ...	2 W.C's., 2 bins.
Levinson's-court, ... ..	7 houses, ...	1 W.C., 1 bin.
Kelly's-court, ... ..	10 houses, ...	2 W.C's., 2 bins.
Marlow's-court, ... ..	8 houses, ...	Closed.
Archbold's-court, ... ..	4 houses, ...	1 W.C., 1 bin.
Meeney's-court, ... ..	5 houses, ...	1 W.C., 1 bin.
White's-court, ... ..	5 houses, ...	1 W.C., 1 bin.
Swan's-court, ... ..	4 houses, ...	1 privy and ashpit.
Foster's-court, ... ..	5 houses, ...	1 privy and ashpit.
Toole's-court, ... ..	2 houses, ...	1 W.C., 1 bin.
Pave-lane, ... ..	7 houses, ...	2 W.C's., 2 bins.
Milliken's-court, ... ..	11 houses, ...	1 W.C., 1 bin.
St Tenement houses, ... ..	—	35 W.C's. and bins.
<b>MULGRAVE-STREET.</b>		
Nugent's-court, ... ..	5 house, ...	1 W.C., 1 bin.
Eldon's-court, ... ..	5 houses, ...	1 W.C., 1 bin.
Lacey's-court, ... ..	4 houses, ...	1 W.C., 1 bin.
Digam's-court, ... ..	6 houses, ...	1 W.C., 1 bin.
Dowling's-court, ... ..	3 houses, ...	1 W.C., 1 ashpit.

## LIST OF COURTS AND TENEMENT HOUSES—continued.

Name of Court.	Number of Houses.	Sanitary Accommodation.
<b>MULGRAVE-STREET—continued.</b>		
Brail's-court, ... ..	3 houses, ...	1 W.C., 1 bin.
Dignam's-court, ... ..	7 houses, ...	1 W.C., 1 bin.
Deane's-court, ... ..	7 houses, ...	1 W.C., 1 bin.
Hendon's-court, ... ..	10 houses, ...	1 W.C., 1 bin.
Penson's-court, ... ..	3 houses, ...	1 W.C., 1 bin.
Begg's-court, ... ..	8 houses, ...	2 W.C's., 2 bins.
35 Tenement houses also in front of said street.	—	35 W.C's. and bins.
<b>PARADISE-ROW.</b>		
Brinn's-court, ... ..	10 houses, ...	2 W.C's., 2 bins.
White's-court, ... ..	6 houses, ...	2 W.C's., 1 ashpit.
Fitchew's-court, ... ..	4 houses, ...	1 privy and ashpit.
9 Tenement houses, ... ..	—	2 privies and 1 ashpit.
<b>CROSS-AVENUE.</b>		
Brian's-court, ... ..	9 houses, ...	1 privy and ashpit.
Acho-court, ... ..	24 houses, ...	2 W.C's., 1 ashpit.
Garnon's-court, ... ..	10 houses, ...	1 privy and ashpit.
Fitzpatrick's-court, ... ..	12 houses, ...	1 W.C., 1 bin.
14 Tenement houses, ... ..	—	14 W.C's., and bins.
<b>TIVOLI-AVENUE.</b>		
Atwood's-court, ... ..	10 houses, ...	1 W.C., 1 ashpit.
Aird's-court, ... ..	6 houses, ...	1 W.C., 1 ashpit.
Connor's-court, ... ..	5 houses, ...	1 W.C., 1 bin.
22 Tenement houses, ... ..	—	4 privies and 4 ashpits.
<b>TURNER'S AVENUE.</b>		
Long's-row, ... ..	6 houses, ...	2 privies, 2 ashpits.
Beatty's-court, ... ..	9 houses, ...	1 W.C., 1 ashpit.
Bond's-court, ... ..	10 houses, ...	1 W.C., 1 bin.
Larkin's-yard, ... ..	8 houses, ...	1 W.C., 1 ashpit.
15 Tenement houses, ... ..	—	4 privies, 4 ashpits.
<b>LOWER GEORGE'S-STREET.</b>		
Flyn's-court, ... ..	4 houses, ...	1 privy and ashpit.
Jones's-court, ... ..	8 houses, ...	2 W.C's., 1 bin.
Eubank's-court, ... ..	7 houses, ...	1 W.C., 2 bins.
Finnegan's-court, ... ..	10 houses, ...	2 W.C's., 2 bins.

## LIST OF COURTS AND TENEMENT HOUSES—continued.

Name of Court.	Number of Houses.	Sanitary Accommodation.
<b>LOWER GEORGE'S-STREET—continued.</b>		
Canningham's-court, ... ..	5 houses,	1 W.C., 1 bin.
Callaghan's-lane, ... ..	—	—
Clarke's-court, ... ..	7 houses,	2 W.C's, 1 bin.
Barton's-court, ... ..	3 houses,	1 W.C., 1 bin.
Crofton-parade, ... ..	12 houses,	1 W.C., 1 bin.
Pine's-court, ... ..	19 houses,	3 W.C's, 3 bins.
3 Tenement houses, ... ..	—	8 W.C's, 8 bins.
<b>CLARENCE-STREET.</b>		
Seaton's-court, ... ..	4 houses,	1 W.C., 1 bin.
5 Tenement houses, ... ..	—	8 W.C's, 8 bins.
<b>CUMBERLAND-STREET.</b>		
Shannon's-court, ... ..	5 houses,	1 W.C., 1 bin.
Connolly's-court, ... ..	7 houses,	1 W.C., 1 bin.
Foster's-court, ... ..	10 houses,	1 W.C., 1 ashpit.
Brown's-court, ... ..	7 houses,	1 W.C., 1 bin.
Byrne's-court, ... ..	4 houses,	1 W.C., 1 bin.
Hilton's-court, ... ..	14 houses,	1 W.C., 1 bin.
Seaton's-court, ... ..	5 houses,	1 W.C., 1 bin.
Clarke's-court, ... ..	6 houses,	1 W.C., 1 bin.
11 Tenement houses, ... ..	—	11 W.C's, 11 bins.
<b>DUNLEARY.</b>		
Dunleary, ... ..	5 Tenement houses	5 W.C's, 5 bins.
<b>YORK-STREET.</b>		
Molloy's-court, ... ..	4 houses,	1 W.C., 1 bin.
Glancey's-court, ... ..	4 houses,	1 W.C., 2 bins.
Chandler's-court, ... ..	24 houses,	3 W.C's, 3 bins.
Arcoo-square, ... ..	18 houses,	1 W.C., 1 bin.
10 Tenement houses, ... ..	—	10 W.C's, 10 bins.
<b>WELLINGTON-STREET.</b>		
Commis's-court, ... ..	4 houses,	1 W.C., 1 bin.
Toomey's-court, ... ..	5 houses,	1 W.C., 1 bin.
Shackey's-court, ... ..	6 houses,	1 W.C., 1 bin.
15 Tenement houses, ... ..	—	15 W.C's, 15 bins.

## LIST OF COURTS AND TENEMENT HOUSES—continued.

Name of Court.	Number of Houses.	Sanitary Accommodation.
<b>GROSE'S-PLACE.</b>		
Eubank's-court, ... ..	6 houses, ...	1 W.C., 2 bns.
Wellington-place, ... ..	9 houses, ...	2 W.C's, 2 bns.
Williams'-cottages, ... ..	7 houses, ...	1 W.C., 1 bn.
<b>KELLY'S-AVENUE.</b>		
Byrne's-cottages, ... ..	5 houses, ...	1 W.C., 1 ashpit.
Knight's-cottages, ... ..	3 houses, ...	1 W.C., 1 bn.
Theracy's-court ... ..	7 houses, ...	1 W.C., 1 bn.
6 Tenement houses, ... ..	—	6 W.C's, 6 bns.
<b>GEORGE'S-PLACE.</b>		
10 Tenement houses, ... ..	—	10 W.C's, 10 bns.
<b>CROFTON-AVENUE.</b>		
Carroll's-court, ... ..	5 houses, ...	1 W.C., 1 bn.
<b>LOWER MOUNTOWN.</b>		
Redmond's-lane, ... ..	6 houses, ...	1 privy and ashpit.
Bund's-cottages, ... ..	8 houses, ...	1 privy and ashpit.
Doogan's-yard, ... ..	3 houses, ...	1 privy and ashpit.
6 Tenement houses, ... ..	—	6 privies and ashpits.
<b>MONESTOWN-AVENUE.</b>		
Donagan's-lane, ... ..	5 houses, ...	1 W.C., 2 bns.
Donagan's-cottages, ... ..	3 houses, ...	1 W.C., 1 bn.
Mary's-cottages, ... ..	9 houses, ...	2 W.C's, 1 ashpit.
Carroll's-cottages, ... ..	4 houses, ...	1 privy and ashpit.
Walsh's-cottages, ... ..	8 houses, ...	2 privies and 2 ashpits.
Kavanagh's-cottages, ... ..	2 houses, ...	1 privy and ashpit.
Myhan's-cottages, ... ..	8 houses, ...	2 privies, 2 ashpits.
Farrell's-cottages, ... ..	2 houses, ...	1 privy and ashpit.
11 Tenement houses, ... ..	—	11 privies and ashpits.
<b>LIST OF COURTS AND TENEMENT HOUSES AT SANDYCOVE, &amp;c.</b>		
Roche's-lane, ... ..	9 houses, ...	1 W.C., 3 privies, 3 pits.
Albert-road, ... ..	40 Tenement houses, ...	40 closets, 40 ashpits.
Donohoe's-lane, ... ..	11 houses, ...	1 W.C., 3 privies, and 3 ashpits.
Albert-place, ... ..	26 houses, ...	1 W.C., 5 privies, 5 pits.
Henrietta-place, ... ..	18 houses, ...	2 privies and 2 ashpits.



## LIST OF COURTS AND TENEMENT HOUSES—continued.

Name of Court.	Number of Houses.	Sanitary Accommodation.
LIST OF COURTS AND TENEMENT HOUSES AT SANDYCOVE, &c.—continued.		
O'Brien's-court, ... ..	3 houses, ...	1 privy and 1 ashpit.
Violet-place, ... ..	11 houses, ...	11 privies and 11 ashpits.
Dixon's-cottages, ... ..	5 houses, ...	1 privy and 1 ashpit.
Killiney-view, ... ..	12 houses, ...	3 privies and 3 ashpits.
GLENAGEARY-ROAD.		
13 Tenement houses, ... ..	—	9 privies, 9 ashpits.
SALLYNOGGIN.		
Sallynoggin-cottages, ... ..	50 houses, ...	50 privies and ashpits.
THOMASTOWN.		
Connolly's-court, ... ..	6 houses, ...	1 W.C., 1 privy and ashpit.
Fagan's-court, ... ..	7 houses, ...	3 privies, 3 ashpits.
Boyd's-court, ... ..	4 houses, ...	1 privy, 1 ashpit.
LIST OF COURTS AND TENEMENT HOUSES AT UPPER GEORGE'S-STREET, &c.		
Angelen-cottages, ... ..	14 houses, ...	3 closets, 2 bins.
Brewster's-cottages, ... ..	10 houses, ...	Closed.
Stone View-lane, ... ..	20 houses, ...	5 privies and 5 ashpits.
10 Tenement houses, ... ..	—	10 closets and bins.
GLASTHULE.		
Brian's-lane, ... ..	12 houses, ...	3 closets, 3 bins.
William-place, ... ..	6 houses, ...	3 closets, 3 bins.
M. O'Brien's-cottages, ... ..	10 houses, ...	10 privies and ashpits.
Nellie's-lane, ... ..	20 houses, ...	3 W.C's. and 3 bins.
Hanavan's-lane, ... ..	25 houses, ...	2 W.C's., 1 bin.
Tenements, ... ..	28 Tenement houses.	23 closets, 10 ashpits.
ADELAIDE-ROAD.		
Henry's-cottages, ... ..	10 houses, ...	2 W.C's., 2 bins.
Carroll's-cottages, ... ..	24 houses, ...	3 W.C's., 3 privies, and 3 ashpits.
Long's-cottages, ... ..	6 houses, ...	6 privies and ashpits.
"	13 Tenement houses.	13 W.C's., 13 ashpits.
EDEN-ROAD.		
Utack's-cottages, ... ..	12 houses, ...	2 W.C's., 2 bins.
Magenta-place, ... ..	19 houses, ...	2 W.C's., 3 privies and pits.
4 Tenement houses, ... ..	—	3 privies and ashpits.

## KINSALE.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE KINSALE URBAN DISTRICT.

BY DR. T. J. BROWNE.

**General Description.** The town of Kinsale is built in part on the side of a rather steep hill sloping towards Kinsale Harbour; the remainder of the town is on the flat and rather low-lying. The streets are very narrow, and the houses old and considerably crowded on area. The urban district of Kinsale comprises an area of 300 acres. The population, according to the Census of 1891, was 4,605, which showed a falling-off of about 1,400 during the previous ten years. The valuation of the district is £5,543, the total indebtedness is £8,200, and the total rates levied 6s. 6d. in the pound on the rateable valuation.

The principal, and, in fact, the only, industry is sea-fishing and fish-curing. During the season a good many persons are employed at these occupations, but of late years the fishing industry has greatly declined. A fine pier was some years ago erected at a cost of £22,000.

Weekly markets and monthly fairs are held in the town.

**Dwellings.** There are about 650 occupied houses in the district. Nearly all the houses are very old and many dilapidated. The houses occupied by the poorer class are, in many instances, particularly in the locality called World's End, scarcely fit for habitation owing to defective sanitation and bad state of repair. The yards are small, unpaved, and badly drained. There is a general absence of sanitary conveniences in connection with the dwellings. Swine are sometimes kept in small yards close to the dwellings so as to give rise to nuisances. In many instances manure, ashes, &c., have to be removed from the yards through the dwellings owing to there being no back entrance to the yards.

**Water supply.** The water supply of Kinsale is altogether insufficient. For six months of the year there is scarcely any water to be had, the springs running almost dry during the summer and autumn months. There are three sources of supply:—(1) A spring to the north of the town, from which the water is conveyed in pipes; (2) a spring at Waterlands to the south-east of the town, from which water is also piped; (3) one public pump and several private pumps and wells in yards. The water is delivered unfiltered, and the quality is supposed not to be good, but has not been analysed for a number of years.

**Sewerage and drainage.** The streets, with the exception of the following, are provided with sewers:—Fisher-street, World's End, Barrack-street, Bandon-road, Blind-gate, Rose-abbey, and some of the smaller lanes and passages. The sewers are, for the most part, constructed of rubble masonry; a

few are piped. Most of the better-class houses are connected with the sewerage system, and a few are drained into cesspits. The poorer-class houses are not connected with the sewers, and are drained under the houses or by surface channels from yard to yard. The outfall of the sewerage system is into the tide at Short-quay, between high and low-water mark. A very offensive odour is given off at this point, particularly during warm weather. The ventilation and trapping of sewers is defective.

The Sanitary Authority undertake the domestic scavenging in the case of houses without yards or having very small yards. About 100 houses are provided with water-closets, and there are about 300 privies and earth-closets. The occupiers are responsible for the scavenging and removal of refuse, &c. This is done at irregular intervals, and, as a rule, is not very satisfactorily performed. There is a manure depôt at Cork-road; the site is well isolated and fairly good.

There are three slaughter-houses in the town, the construction and drainage of which are not satisfactory.

There are three common lodging-houses in the town; they are fairly suitable, and are registered and regularly inspected.

There are about fifty tenement houses in the town. Three and four families occupy each house; overcrowding occurs in some instances. The houses, as a rule, are of a poor class and unprovided with sanitary conveniences.

There are about two dairies, four cow-sheds, and six milk-shops in the district. The dairies are in the dwelling-houses. The cow-sheds are defective in construction, and are not kept in a cleanly state. There are six milk shops or places where milk is retailed; in none of them is milk exclusively sold. There are no regulations in force for the management of dairies, cow-sheds, and milk-shops in the district.

There are about 100 piggeries in the town; nearly all of them are situate in small yards close to dwellings, and are badly drained and kept in a filthy state.

The Urban District Council meet once a month and oftener, if requisite, for the transaction of public health business. The necessary orders are made on the reports of the Medical Officer of Health, and, in case of non-compliance, enforced. During the past year the Medical Officer of Health furnished sixty reports to the Sanitary Authority. The Sanitary Sub-Officer furnished fifty-six reports to the Medical Officer of Health, and made 850 inspections. He keeps a diary of the work performed by him and reports to each meeting of the Council. There are no bye-laws under the Public Health Acts in force in the district, except those relating to common lodging-houses.

The Infectious Disease (Notification) and (Prevention) Acts are not in force in the district.

The Workhouse Fever Hospital is available for the reception of patients suffering from diseases of an infectious nature. There is an ambulance at the Workhouse for the conveyance of patients suffering from infectious diseases to hospital, but there is not a disinfecting apparatus.

Excrement and refuse disposal.

Slaughter-houses.

Common lodging-houses. Tenement houses.

Dairies, cowsheds, and milkshops

Keeping of animals on premises.

Sanitary administration.

Hospital accommodation, &c.

Recommen-  
dations.

The matters calling for the early attention of the Sanitary Authority are as follows:—

- (1.) The provision of a sufficient water supply.
- (2.) The remedying of the defects above pointed out in the sewerage system, and the enforcement of proper drainage of houses and premises.
- (3.) The abatement of nuisances arising from insanitary dwellings, overcrowding and the keeping of animals on premises, &c.
- (4.) Better attention to domestic scavenging and removal of refuse.
- (5.) A code of bye-laws under the Public Health Acts should be adopted and enforced, and the Infectious Disease (Notification) and (Prevention) Acts adopted.
- (6.) Regulation under the Dairies, Cow-sheds, and Milk-shops Order should be adopted and enforced.
- (7.) A disinfecting apparatus should be provided.

THOMAS J. BROWNE,

Medical Inspector.

January, 1901.

## LISBURN.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE LISBURN URBAN DISTRICT.

BY DR. C. J. CLIBBORN.

This prosperous town, originally known as Lisnagarvey, is built on the River Lagan, and stands about seven miles south of the city of Belfast.

General  
Description.

Flax-spinning, the manufacture of linen and thread, and bleaching are extensively carried on in the town and the immediate neighbourhood. It is one of the most thriving towns in the north of Ireland, and is steadily improving. The streets are generally broad, and, as a rule, kept fairly clean.

Within its present municipal boundary it contains 1,135 acres. About 211 of these are situated in the county of Down, the remainder in the county of Antrim.

The population in 1841 was 6,284, and in 1891, 12,250.\*

A large portion of the inhabitants of Lisburn consist of operatives, who find employment in the mills, factories and bleach-works. The town contains many large and prosperous shops and places of business.

It measures from north to south about one and a half miles; from east to west, about one and three-quarter miles. The town in shape is nearly circular, with a radius of about three-quarters of a mile. It contains about 2,542 houses, of which number about fifty have thatched roofs; the remainder are slated.

The rateable value of the district is £29,203 5s., composed as follows:—

Buildings,	£26,159	5	0
Lands,	3,044	0	0

Within the urban area of Lisburn there are about 10½ miles of roads and streets under the control of the Urban Council; 8½ miles are lighted and cleansed by the Council. These roads and streets were formerly county roads, and maintained by Grand Jury presentment.

The lighting of the streets is performed by contract with a local Gas Company. The spreading of metal on the roads is carried out by employees of the Council, but the scavenging and providing of road metal is done under contract.

In addition to the 8½ miles there are about 1½ miles of what might be termed lanes, and ½ a mile of courts and alleys, which are not lighted or cleansed by the Council, but by the owners of property.

\* Population according to the Census of 1901 is 11,459.

The cleansing of these lanes and alleys is not, I think, sufficiently looked after.

**Geological formation.** Is composed of flint and chalk at 100 feet in depth in lower part of the town, with various strata to the surface of red and blue clay, sifting sands and gravel.

About two and a half miles north of the town limestone is within ten feet of the surface, where the source of the water supply originates.

**Subsoil.** The higher part of the town consists of sand and gravel, the low parts of red clay. The surrounding land, as a whole, is sandy.

**Rainfall.** There is no rain-gauge at Lisburn, but I am informed the average rainfall for ten years would be about twenty-eight inches.

Birth and death-rate	Year.				Total Births.	Total Deaths.
	1887.	...	...	...	...	...
	1887.	...	...	...	343	211
	1888.	...	...	...	335	219
	1889.	...	...	...	376	226
	1890.	...	...	...	313	228

Deaths from zymotic diseases.	Year.					
	Enteric.	Scarlatina.	Diphtheria.	Measles.	Diarrhoea.	
1887.	...	...	1	1	-	-
1888.	...	...	7	2	2	-
1889.	...	...	2	-	-	-
1890.	...	...	14	2	-	4

According to the Census of 1891 the population was 12,250, births numbering 330, deaths, 229, giving a rate per 1,000—26·7 for births, and 17·7 for deaths. In the year 1900 the birth-rate was 25·4, the death-rate from all causes, 23·0, and the death-rate from the principal zymotic diseases, 1·7 per 1,000 of the population.

Calculating the population at 12,250, the number of persons to an acre would amount to 10·8.

## SANITARY ADMINISTRATION.

The Urban Council consists of fifteen members. The following are the names and salaries of their officials:—

Sanitary  
Adminis-  
tration.

Clerk—Mr. J. W. Wilson,	£30 per annum.
Sanitary Sub-Officer—Mr. James Innes,	20 "
Medical Officer of Health—Dr. Jefferson,	15 "
Consulting Sanitary Officer—Dr. Jefferson,	15 "

These officers keep their diaries and records, and carry out their duties efficiently.

The reservoir, known locally as Booner's, is situated about two to two and a half miles outside the town; there are two filter-beds composed of sand, charcoal, and stones. About 500 acres of mountain pasture land compose the catchment area with a small portion of peat and arable land.

The capacity of the reservoir is 25,750,000 gallons.

Two samples of water were forwarded to Mr. Barklie, Analyst, for analysis on 30th August, 1900. No. 1 was taken from the river above the reservoir; No. 2 from the town, after passing through the filter-beds. Result of analysis is as follows:—

	No. 1.	No. 2.
Total solids, ... ..	30.8	26.00
Volatile matter, ... ..	13.8	18.00
Chlorine and chlorides, ... ..	1.6	1.30
Equivalent to sodium chloride, ... ..	2.4	1.92
Fixed solids, ... ..	17.0	8.0
Hardness, ... ..	19.2	22.30
Free ammonia, ... ..	Trace.	Trace.
Albuminoid ammonia, ... ..	0.014	0.018

\* Both samples contain a good deal of matter in suspension, and the solid residue was of reddish tint, indicating the presence of clay or sandy matter. The chlorine in each sample was small.

"The freedom from nitrites and nitrates and the small amount of ammonia indicates that the volatile matter is of vegetable origin. The water cannot be considered as high-class, and would be much improved by efficient filtration. A careful microscopic examination showed that there were few micro-organisms (the matter was chiefly sand and vegetable)."

I have been informed another sample has since been forwarded for fresh analysis, but the Urban Council would, I think, do well to follow the advice of Dr. Jefferson, their Medical Officer of Health, and have, in addition to analysis, a bacteriological examination of their water supply made from time to time.

I have reason to believe that the present water supply is not sufficient to enable the sewage of the district to be disposed of on the water-carriage system, for which reason they are unwilling to order water-closets to be generally provided,

Sewerage.

The present system of sewerage for Lisburn town is not satisfactory. It consists of about 300 perches (1,650 yards) of 12-inch to 9-inch earthenware glazed fosses pipes, which have from time to time been laid down within the last twelve years in the streets as main sewers. These do not include many minor sewers laid as branch mains to carry away house drainage backwards to outfall.

The main sewer in Lisburn, known locally as the Bye-wash, was until lately an open stream, but has since been culverted on top and inverted in bottom with brick and cement, and is, on an average, about seven feet in diameter.

A great number of main sewers in the streets are constructed on the old system of brick-barrel sewers. It is to be hoped that in time these will be replaced by glazed pipes; almost all the house drains are glazed earthenware pipes.

At present the sewage from 457 water-closets and other sources is discharged into the Lagan Canal and Mill-race in a crude state. For some time the Urban Council have had under their consideration the adoption of an improved scheme of sewerage. It is proposed to re sewer the town and to adopt some scheme of septic tanks for the final disposal of sewage matter. The Medical Officer of Health, Dr. Jefferson, and the Town Surveyor have visited several towns in England where schemes of this kind are in use, but up to this their reports have not been laid before the Urban Council for consideration.

Excrement and refuse disposal.

Except in a comparatively few cases, the Urban Council do not undertake the removal of the contents of ashpits or privies; this is supposed to be done by occupiers or landlords, but in many cases it is much neglected.

I found that in the town of Lisburn 457 houses are provided with water-closets, 1,832 are provided with privies and ashpits. If the numbers given me are correct, and I have no reason to doubt it, a considerable number of houses in the town must be unprovided with sanitary accommodation. The number of houses in the town is stated to be 2,542, and as 2,289 only are provided with sanitary accommodation, the remaining 253 houses are without proper sanitary accommodation. Admitting that some of the houses are on the block system it would still leave a considerable number in an insanitary condition.

The following are some particulars in regard to the sanitary accommodation in certain streets in the district:—

Streets.	Water Closets.	Privies and Ashpits.
Chapel-hill, ... ..	14	104
Longstone, ... ..	4	178
Antrim-street and road, ... ..	70	167
North Circular-road, ... ..	16	—
Low-road, Millbrook-road, Seymour-castle, Railway-street, Backshore-walk,	116	420
Limeshall, Barrack-lane, Hall-street, and Backlane.	21	129
Cross-row and Market-square, ... ..	41	7



TABLE—continued.

Streets.	Water Closets.	Privies and Ashpits.
Bow-street, ... ..	43	21
Bridge-street, ... ..	22	69
McKeown-street, ... ..	—	30
Dublin-road, ... ..	20	21
Barrack-street and Church-street, ..	11	75
Market-street, ... ..	20	—
Old Hillsborough-road, ... ..	—	49
Young-street, ... ..	9	43
Ballynahinch-road, ... ..	2	64
Greg-street, ... ..	9	111
Hill-hall-road, ... ..	2	62
Sloan-street, ... ..	12	70
Morcor-street, ... ..	3	56
Island-row, ... ..	5	56
Magheravee-road, ... ..	14	1
Smithfield, ... ..	3	31
Haskin's-lane, ... ..	—	25
	457	1,332

As regards the privies and ashpits in the town of Lisburn, I found that the privies were usually constructed of brick or wood, the contents being allowed to discharge into uncovered ashpits, neither the walls nor floors of which are cemented. The result of this is that ashpits are often a mass of liquid filth, which must sooner or later soak into the surrounding soil. Soil, so impregnated, in time becomes a fruitful source of typhoid fever and diphtheria.

In course of my inspection I saw some premises where the walls and floors of the privies were cemented, and the ashpits covered. The advantage of this arrangement was very marked in these houses. The Urban Council would, I think, do well to see that in the rest of the town, where there are no water-closets, privies of proper construction and covered ashpits should be erected in place of the present unsatisfactory ones. The Town Surveyor might be asked to prepare drawings and specifications of privies and ashpits such as are contemplated by the provisions of Section 50 of the Public Health (Ireland) Act, 1878.

In a large number of yards in the town the surface was bad, being uneven and often either not paved or very badly so. Manure heaps are not sufficiently often removed in these yards; adequate paving and channeling should be provided. Concrete would be preferable to paving. Open gutters should be abolished, and covered drains, with trapped gullies, substituted.

The Urban Council have not an Infectious Disease Hospital nor disinfecting apparatus under their control. The County Infirmary is

Privies  
and  
Ashpits.

Hospital  
accommodation.

situated within their municipal area, and I understand some wards are devoted to zymotic diseases. The Urban Council are dependent on the Workhouse Fever Hospital for the accommodation and treatment of any cases of infectious disease that may occur within their jurisdiction; they are also dependent on the Workhouse for an ambulance van.

**Bye-laws.** Bye-laws in regard to the following matters have been adopted by the Urban Council:—

Licensing, registering, and inspection of slaughter-houses.  
Hackney cars.  
New streets and buildings.  
Cleansing of footpaths.  
Removal of house refuse.  
Cleansing of earth-closets and privies; also  
Regulations as to Waterworks and Cemeteries.

**Slaughter-yards.** Since my last inspection of this district there has been an improvement in the general cleanliness of the slaughter-yards, but there are still some defects connected with them:—

I. Leatham's (Hackner's-lane) is in fairly good order, but slaughter-yard requires some additional cementing to prevent soakage of objectionable matter into surrounding soil.

II. Lavery's. This slaughter-yard is kept clean, but a portion of the floor of slaughter-house is made of wood. This should be removed, and asphalt substituted.

III. Devaney's. Good slaughter-house and well kept.

IV. Laverty's. Same remarks as at III., but there is an absence of proper sanitary accommodation for these premises.

V. Dorman's. Well kept, and is a good slaughter-house.

VI. Greg's. The yard of the slaughter-house is badly tiled; in an adjoining yard there is a bad wooden privy with an uncovered ashpit full of liquid filth. This house is badly situated, and not fit for a slaughter-house.

VII. Dickey's (20, Bridge-street). Slaughter-yard is well tiled; in same yard and close to the slaughter-house there are two privies and uncovered ashpits, into which the contents of the privies flow; this yard is common to two houses; a store for spare slaughtered cattle is close to this privy; this is not a good position for a slaughter-house; it is very objectionable, if not dangerous, to have carcasses in such close proximity to a foul privy and ashpit.

**Insanitary Premises.** Bachelor's-walk.—The privies in this street are of fairly good construction, but the ashpits are not covered. Neither floors nor walls of privies are cemented so as to prevent soakage of deleterious matter into the surrounding soil. Ashpits are not emptied of their contents sufficiently often. Urban Council would do well to have their bye-laws on this subject more strictly enforced both here and in the town generally.

Antrim-street, north side.—Same remarks apply as those made *re* Bachelor's-walk.

Antrim-street, south side.—In this street there are several badly-constructed wooden privies; some of the yards are in a very dirty condition. These wooden privies should be removed, and privies of stone or brick, with cemented floors and sides, and covered ashpits provided.

Antrim-place.—Same remarks apply, but the passage was in a very insanitary condition, human excrement lying about. The Sanitary Sub-Officer would do well to pay special attention to this portion of his district.

M'Keown-street.—Some of the privies in this street were of bad construction, with uncovered ashpits. Privies, generally speaking, required cleaning out; evidently some of them had not been emptied for a considerable time.

Ball-alley.—Ashpits uncovered and not cemented. The privies for these houses were opposite them, distant about twenty-seven feet, and human excrement was lying about the front yard. There are no back doors to the houses. This place is in a most insanitary condition.

Chapel-hill.—The large majority of the privies were not cemented; the ashpits were in the same condition, and uncovered. This state of affairs always leads to a collection of liquid filth in the ashpits, turning what should be a receptacle for dry refuse into an open cess-pit, and placed, generally speaking, in close proximity to the dwelling-houses, polluting both the air and soil.

Philip's-court (off Chapel-hill).—In this court the number of houses that have been closed to human habitation are left open, so that any person can go into them, and they are at present practically used as privies and receptacles for general refuse. In their present condition they are a serious nuisance. These houses should either be pulled down or hoarded up after being cleansed.

Stewart's-court.—Privies and ashpits uncemented, nor are ashpits covered.

Mill-view.—Two houses here have only one privy, which is situated on the opposite side of the street, and it is not fit for the purpose, being of bad construction. These houses are hardly fit for human habitation.

Fairymount-square.—This place shows very well the advantage of having even partially-covered ashpits, with cemented walls.

Market-place (Mr. Alexander's property).—The sanitary condition of this area shows the benefit to be derived by providing water-closets and properly-covered ashpits.

Bow-street.—The yard at rear of Bow-street is common to four houses (Evans, Cherry, Neill, and Thompson), and is in a most insanitary condition, being generally dirty, badly paved, and contains a large heap of refuse.

Hasken's-lane.—Privies and ashpits are of bad construction, and in a dirty condition. The yards are too small, containing heaps of filth in close proximity to the dwelling-houses. In two of the yards there were properly-constructed privies, but the ashpits were not covered.

Smithfield, north side.—Good yards and fairly good privies and ashpits, but these are neither covered nor cemented.

Linenhall-street (north).—Seven houses, the property of Mr. Dorman, have only five privies; the yards require to be paved; ashpits were not covered, and at date of my visit were full of liquid filth.

Yards behind houses of Messrs. M'Guirk and M'Roberts had badly-constructed privies and ashpits, both out of repair. The yards also were in a dirty condition.

Ward's-court.—Ashpits in a filthy condition.

Bullock-square.—Four houses in this square had only one privy and ashpit common to all; ashpit uncovered.

Barnsby's-row (portion of).—This area has been greatly improved since my last inspection. Good privies with properly-tiled yards have been provided, but the ashpits have not been covered. In four houses at the end of this row the yards require to be put in order. Ashpits are not covered. Both privies and ashpits require floors and walls to be cemented so as to prevent soakage of contents into surrounding soil. In another portion of this row there were no back doors to the houses, one privy and uncovered ashpit providing for five houses. Premises were in a most insanitary condition. Near this place is an open space used by the Urban Council as a depôt for general refuse, &c. As the depôt is in close proximity to dwelling-houses, Council should, I think, obtain a site elsewhere, if possible outside the town, for a refuse depôt.

Barrack-street.—A house in this street is used as a tenement house. It is not suited for the purpose, and is overcrowded, as whole families are living in what is practically one room, which is divided into two portions by a wooden partition. One room had four children and two adults, another four children and one adult living in them.

Back-lane.—Very bad privies in a dirty condition. Practically there were no ashpits, refuse being thrown into a hole in the ground. The entire place was in a most unsatisfactory condition.

Wood's-alley.—This place was in a most insanitary condition; no back doors or yards to the houses; only two badly-constructed privies and ashpits for sixteen houses.

Enty (Seeds).—Two houses with two badly-constructed wooden privies, and uncovered ashpits full of feculent matter.

Bridge-street.—Badly-constructed privies and uncovered ashpits.

Bullock's-court (off Bridge-street).—Formerly this was a most insanitary area, but owing to the fact that water-closets have been provided, ashpits covered, and yards cemented, it is now quite clean, and in a good sanitary condition.

Mac-alley.—Some of the houses are in very bad repair and unprovided with proper sanitary accommodation.

Greg-street.—Some of the houses in this street had badly-constructed privies and uncovered ashpits.

Canal-street.—In this street there were six houses back to back, with only one privy and one uncovered ashpit.

Gibson and Crosskenry.—At end and rear of this property there is a small tank under cover for collection of surface water and slops. This at times overflows on the surface of the public road; this overflow should be piped direct into one of the town sewers.

Miss Lavery's premises, Lisburn.—Miss Lavery keeps milch cows on premises that are not, I think, fit for the purpose. Four cows are kept in a shed which has not sufficient air space, and is badly ventilated. Close to the cow-shed there was a large heap of manure, which must have been there for some time. Close to this there is a badly-constructed privy and uncovered ashpit; below this there was another shed containing two cows and a pony, and below this another shed with three cows and four calves, and lower down a shed with seven pigs.

There are, I am informed, twenty-nine dairy-keepers in Lisburn <sup>Dairies,</sup> Urban District, and six milk-shops owned by persons who do not <sup>cowsheds,</sup> keep cows, but the Urban Council have not adopted any regulations <sup>and</sup> for the management of dairies, cowsheds, and milk-shops, and this <sup>milkshops.</sup> subject should, I think, be taken into their serious consideration as soon as possible.

The registration of common lodging-houses has been allowed to fall <sup>Common</sup> into abeyance in the urban district. Mr. Wilson, who has recently <sup>lodging-</sup> been appointed Clerk to the Urban Council, informed me he was <sup>houses.</sup> working up this subject. It is most important that this should be done, as I understand there are about fifteen houses in the town which require to be registered and inspected.

I am glad to be able to report that since my last inspection of this <sup>Recommend-</sup> urban district there has been a decided improvement in the sanitary <sup>ations.</sup> condition and general cleanliness of the town. The Urban Council have, I think recognised the importance of endeavouring in the real interests of the town to improve its sanitary condition. Though improved, it is far from what it should be.

The Urban Council should, I think, give thorough and systematic attention to any insanitary premises in their district. Special and early attention might be paid to sanitary defects referred to by me in list attached to this report. They should exercise the various powers they possess or can obtain to remedy the defects in detail.

In particular they should, I think, proceed to deal effectively, and as soon as possible with the following:—

I. An increased water supply so as to enable them to have the sewage dealt with on the water-carriage system. The present filter-beds should be improved or increased (the result of analysis of the water points to the necessity of attending to this.)

II. A new system of sewerage should be carried out as quickly as possible. The old built sewers should be replaced with glazed earthenware or other pipes fit for the purpose. The present system of allowing crude sewage to be discharged into the Lagan Canal and Mill-race should be discontinued.

III. Better paving and concreting of yards at present unpaved or insufficiently so.

IV. More strictly enforcing the bye-laws as to removal of excrement and refuse from privies and ashpits.

V. The Urban Council should, I think, take steps to have the present objectionable privies and ashpits replaced by properly-cemented and covered ashpits, privies to be built of brick, stone or concrete, sides and floors of both privies and ashpits to be properly cemented. In no case should contents of privies be allowed to discharge into ashpits.

VI. Where possible, water carriage should be employed for removal of sewage.

VII. The Council should see that lodging-houses are duly registered and inspected. Bye-laws as to dairies, cow-sheds and milk-shops should be adopted; also as to keeping of pigs. They would, I think, do well to adopt the Infectious Disease (Prevention) Act, 1890, in addition to the Infectious Disease (Notification) Act, 1899.

VIII. Removal of refuse depôt from its present position.

In conclusion I wish to state that I am greatly indebted to Dr. Jefferson, Medical Officer of Health, for the valuable assistance he gave me while making my inspection. He has a thorough knowledge of his district, and is a most earnest Medical Officer of Health.

CUTHBERT J. CLIBORN,

Medical Inspector.

December, 1900.

## LURGAN.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE LURGAN URBAN DISTRICT.

BY DR. C. J. CLINSON.

Lurgan is a prosperous and flourishing town in the north-east of the County Armagh. It is situated twenty miles south-west from Belfast, and a mile and a half south from Lough Neagh. General description.

Lurgan was built by James Brownlow, to whom a grant of the town was made by James I. in 1619. It consisted of 42 houses, all built by English settlers. It was burned by the insurgents in 1641, and again by the troops of James II., and after its restoration in 1690, a patent for a market and fair was obtained. The population according to the Census of 1891 was 11,447, occupying 2,750 houses.

The area within the town boundary is, I believe, 851 acres; the annual valuation of rateable property is about £25,000, and the township is increasing in value. In the year 1831 the population was only 3,760, and the rateable property was then £5,578.

The municipal affairs of Lurgan are managed by the Urban District Council.

The Urban Council consists of fifteen members, and the Sanitary Staff comprises an Executive Sanitary Officer, a Medical (Superintendent) Officer of Health, and a Sanitary Sub-Officer.

The main thoroughfare of Lurgan, for upwards of half a mile from the eastern end of Queen-street to the church, extends along the crest of a hill in a north-westerly direction at a level of about 200 feet above the sea-line, and about 150 feet above the summer level of Lough Neagh, from which it is distant about one and a half miles. Along either side of this ridge or crest the ground falls rapidly, so that its configuration lends itself admirably to the efficient sewerage of the district.

The underlying geological formation consists of a basalt rock covered with beds of clay, gravel, and sand of varying thickness up to forty feet. In some places the rock comes within a few feet of the surface, and its hardness and compactness have been such that frequently blasting operations are required in making and laying down new sewers. A layer of dark, bluish, tenacious clay also frequently rests on the trap. Geological formation.

Beneath this basaltic formation, which is of enormous thickness, there are great beds of chalk and green sand, which in turn rest on the new red sandstone. The chalk beds come to the surface along a cliff or bluff about two miles from the town in an easterly direction, and, with a dip or depression of five degrees, extend under Lough Neagh in a north-westerly direction, so that the enormous thickness of the overlying trap may be fairly closely calculated. It would probably be 770 feet below the surface of the highest end of Queen-street.

Water  
supply.

Until 1893 the town was entirely supplied with water from surface wells sunk to varying depths in the beds of clay and gravel. As the town enlarged these, however, proved quite inadequate to the wants of the town, and numerous attempts were made to get a further supply by boring into the traps, but without avail, any water that was got from this source being so hard (in some cases 70 degs.) that it was quite unfit for domestic or manufacturing purposes. The procuring of a public supply of water suitable for all purposes was a very prominent question at the meetings of the Commissioners ever since their first formation under the Towns Improvement Act, 1854.

Eminent engineers were asked from time to time to evolve schemes, but nothing really was done till 1890, when Mr J. W. Grover, M.I.C.E., Consulting Engineer, gave his opinion, after examining all probable sources, that the only feasible scheme was to take a supply from Lough Neagh by pumping. Having ascertained from numerous analyses by first-class chemists that the Lough water would, if properly filtered, be in every respect suitable, the matter was taken in hand by the then Commissioners, and in 1893 a pumping scheme was completed with a station at Castor Bay, on the Lough shore, and a reservoir at Gitson's-hill, capable of supplying 500,000 gallons daily or, as was calculated, 25 gallons per head per day for a population of 20,000. During the past year the quantity actually consumed averaged 17 gallons per head each day. A good deal of prejudice and sentiment prevailed at first against the use of the water for cooking purposes, but these have been gradually overcome, and at the present time the water is almost universally used for all purposes. The houses of the working classes are having the water brought into them by the owners at a very rapid rate, and scarcely a month passes that applications are not made for permission to introduce the water into several blocks of houses, so much so that the Urban Council have resolved to remove several street fountains as being altogether unneeded.

The cost of the water scheme was £28,000, imposing at first a burthen on the rates of 2s. 3d. in the pound, but this burthen has been gradually diminishing, until it is now reckoned at 1s. 5d., and every person seems thoroughly satisfied that the value obtained was well worth the cost. The water has only 6 degs. of hardness (Clarke's scale), and when filtered is a clean, wholesome water.

Sewerage.

Before 1854 the house drains simply emptied themselves into the streams that ran along the low-lying ground on either side of the ridge on which the town was built. These streams carried off the rainfall from a circumscribed district immediately outside the town, consisting of agricultural and pasture lands. In the summer they were usually dry and presented the character of open sewers, so that the Commissioners, immediately after the adoption of the Towns Improvement Act, devoted their attention to laying down proper covered sewers. First, the north-east sewer was made in 1855, and afterwards the south-west, and these with many branches form the almost complete system in use at present.

The south-west sewer is flushed by receiving the stream which was formerly called the Flush River, which in wet seasons carries a considerable volume of water, whilst a communicating sewer at the eastern end of the town conveys a considerable overflow from the same stream to the north-east. These two main sewers are, I am informed, well-built, impervious barrel sewers, and all the other sewers in the town are formed of glazed earthenware pipes, well laid and jointed.



The monies required for making all these sewers were borrowed either from private individuals or from the Board of Works, and their construction was carried out under the supervision of the Town Engineer. The two main sewers at this outfall are continued in the direction of Lough Neagh through a low-lying district, consisting chiefly of pasture meadows, and it has been the custom for a very long time for the owners of these meadows to irrigate them periodically by means of dams and sluices, and so make use of all the fertilising material carried down, but this, so far as the north-east sewer is concerned, has, I hear, been discontinued for a number of years, and, acting on the advice of their Medical Superintendent Officer of Health, the Commissioners have been contemplating the establishment of a sewage-disposal system so as to keep themselves abreast of the sanitary requirements of the situation. With this intent, Dr. Agnew, Medical Superintendent Officer of Health, and Mr. Shillington were requested by the Commissioners to visit Exeter, London, Headon Sutton, Manchester, and several other places in England four years ago with a view to advise the Commissioners as to the best system suitable for the requirements of Lurgan. These gentlemen duly submitted a report advising the adoption of a modification of the Exeter system on much the same lines as the Sutton system, and the Council have only been prevented, I understand, from carrying out the same by the small margin of borrowing powers left in consequence of the very large expenditure required for the water scheme. This margin, however, is likely to be large enough in a short time to enable them to carry out a scheme, and I think they should be encouraged to do so at the earliest possible moment.

Very great improvement has been made in the construction and surroundings of the houses occupied by the working classes since I made my first inspection of this district some years ago. A great number of courts have been closed up in which the houses were so arranged that they could not be made fit for human habitation, or provided with proper sanitary accommodation. It has been the aim of the Sanitary Authority that each house should be provided with a separate enclosed yard, containing separate privy accommodation, and a properly-constructed ashpit. With very few exceptions, and these confined mainly to the outskirts of the town, nearly every house has been so provided, and during the past two years a still further important and desirable step has been taken in the endeavour to secure that each of the yards is properly tiled or concreted, and provided with a suitable gully-trap and house drain, communicating and properly connected with a public sewer, and that, as far as possible, the ordinary midden privy should be converted or replaced by a properly-constructed water-closet and dry-ashpit. Since my last inspection, two years ago, 500 middens have been thus altered, and the improvement effected thereby is strongly marked. I was also greatly pleased with the cleanly condition in which these yards and closets were kept, as well as the marked improvement noticeable in the interior of the houses, and personal habits of the occupants. The improvement in the healthy appearance of the children was very noticeable. You could almost have told in passing through the dwelling-house the particular kind of sanitary accommodation provided in the yard. In a few weeks (the Medical Superintendent Officer of Health informed me) about 160 more will be similarly altered, and that a great many owners are voluntarily consulting him about making the required changes.

Housing  
of the  
working  
class.

The Medical Superintendent Officer of Health and Executive Sanitary Officer have furnished me with the following particulars:—

Total number of houses in the town, . . . . .	2,565
Number of houses under £10 valuation, . . . . .	2,163
Number of houses with separate yards, . . . . .	2,507
Number of houses with privies, . . . . .	1,178
Number of houses with water-closets, . . . . .	1,387
Number of houses with water laid on, . . . . .	1,643
Number of houses with water laid on in 1900, . . . . .	265
Number of houses with water laid on in 1901, . . . . .	224

A great many new houses have been erected during the past few years suitable for the working classes and of a very comfortable and superior type, each house consisting of four rooms, airy and well ventilated, the kitchen being well tiled. Attached to each house is a tiled or concreted yard, with a properly-flushed water-closet and dry-ashpit, the latter being so constructed that the contents can be removed through a trap-door at the back without soiling the yard. The ceilings of these houses are never less than nine feet high, and the bye-laws with regard to window space and ventilation are strictly enforced.

Since my first visit some years ago to this town, when I had to make a most unfavourable report, a great many small courts have been closed up and have disappeared, so that with the exception of M'Corry's-court in North-street, Hayellor's-court off Edward-street, and one or two courts off Castle-lane, notably Fleming's-court and Gilbert's-court, there is really no bad or slum property that could be brought under the Housing of the Working Classes Act and condemned as being unfit for human habitation. This is a very gratifying state of affairs, and one upon which the Urban Council are to be highly commended. The two large improvement schemes which were taken up by the Council some years ago are being brought to a termination. Each one is being opened up by a new and spacious street, which will contribute largely both to the appearance and sanitation of the town.

The following table gives the birth and death-rate and zymotic death-rate for each year of the decade, 1891 to 1900:—

Vital  
statistics  
of the  
town.

Year.	Birth Rate.	Death Rate.	Zymotic Death-rate.
1891, . . . . .	301	249	21
1892, . . . . .	304	250	26
1893, . . . . .	320	179	16
1894, . . . . .	322	203	16
1895, . . . . .	311	275	33
1896, . . . . .	315	184	18
1897, . . . . .	306	200	26
1898, . . . . .	313	206	28
1899, . . . . .	313	220	17
1900, . . . . .	353	245	14

The high death-rates in 1895 were caused by twenty-six deaths from measles and twenty-seven from pertussis out of a total of seventy-one deaths from zymotic disease.

The number of deaths from zymotic disease during the past five years has been as follows:—1896, 21; 1897, 17; 1898, 32; 1899, 20; and 1900, 16.

There are about ten miles of streets inside the town boundary, the Streets main streets being wide and spacious and tolerably well surfaced.

With the exception of Church-walk, Castle-lane, and Robert-street, and the few courts that thus exist, the remainder of the streets are least forty feet wide, flanked by pavements, and in a great many cases well laid and flagged footpaths.

There are only two registered slaughter-houses in the Slaughter-town. There were recently two others, but the licences for these houses were allowed to lapse, and the Council refused to re-register them, the building being unsuitable for the purpose.

The two existing ones, though fairly well kept, are not to be commended, but I understand that the Council are taking steps to put up a public abattoir. This will be a great and much-needed improvement, and I trust that the Council will see their way to proceed with this work in a short time. Too much attention cannot be given to the providing of a good supply of clean, wholesome untainted meat for the benefit of the public.

There are twenty-one registered cow-keepers in the town, besides Dairies a large number of milk-vendors, including some who keep their and dairies in the country and bring a supply in twice daily in carts. The Sanitary Sub-Officer is also Dairy Inspector, and I understand this office has been in existence in Lurgan since 1886. cowsheds.

The duties of the Sanitary Authority in connection with this matter have been well attended to, and although the suggested regulations have not yet been adopted they are being practically carried out, inasmuch as a minimum cubic space of 600 feet for each cow was fixed for all old cow-sheds some years ago; a minimum of 800 feet is required in all new byres. The ventilation and lighting of the sheds are also well looked after, and indeed the different matters requiring attention seem to be attended to by the officials.

I came across very few pigs during my inspection, and I have no doubt their absence contributed largely to the cleanliness and favourable condition of matters that existed in the neighbourhood of some of the houses.

The following bye-laws under the Public Health Acts are in force in the district, viz:—Prevention of nuisances, building, slaughter-houses, but the bye-laws regarding slaughter-houses are, I am informed, not strictly enforced, as the magistrates refuse to convict till a public abattoir is provided by the Urban Council.

The great improvement that has been effected in the sanitary Gen-ral condition of the town could only have been brought about by the remarks continuous supervision of the different officials. The Medical Superintendent Officer of Health, Dr. Agnew, has a keen and intelligent interest in the sanitation of his district, and the Urban Council support him in every way.

The powers vested in the Council by the Public Health Acts have been evidently firmly and judiciously used, and the result has been a condition of matters which, I am sorry to say, is not always met with in provincial towns.

The only point to which I consider it my duty to refer specifically is the necessity for a proper system of sewage disposal, which I trust the Council will be enabled and encouraged to undertake in the near future. With the great increase that is taking place in the number of water-closets and the abolition of the insanitary and offensive midden privies, this question must be deemed one of urgency.

The erection of a public abattoir also appears to be much required, and I think the Urban Council should endeavour to proceed with this project with as little delay as possible. My attention was drawn by the Medical Superintendent Officer of Health to the necessity that exists for a modern up-to-date steam disinfecter. A disinfecting apparatus erected at the Workhouse should be equal to the requirements of the rural districts as well as the urban, and the Medical Superintendent Officer of Health's advice should be obtained as to the best type.

CUTHBERT J. CLIBBORN,  
Medical Inspector.

July, 1901.

## NENAGH.

### REPORT ON THE SANITARY CIRCUMSTANCES AND ADMINISTRATION OF THE NENAGH URBAN DISTRICT.

BY DR. T. J. BROWNE.

The urban district of Nenagh covers an area of 2,090 acres, and is situate in the North Riding of the county of Tipperary, and in the centre of a good agricultural district in which oats and barley are extensively grown. Monthly fairs and bi-weekly markets are held in the town and are well attended. Malting and the manufacture of mineral waters are the principal industries. The number of inhabited houses in the district is 1,290, and the population, according to the Census of 1891, 4,967. The valuation for rateable purposes is £8,908 15s. The liabilities amount to £6,189 6s. and the rates levied for all purposes during the past year amounted to 6s. 6d. in the pound. The township of Nenagh was constituted an urban district on the 1st April, 1900, and the Urban District Council since have had control of the sanitary administration of the district.

The better-class houses, which comprise about a fourth of the total number of houses, are situate in Castle-street, Barrack-street, Queen-street, Summer-hill, and Peter-street, and are fairly well circumstanced as regards sanitation, construction, &c. The poorer-class houses, occupied by the small shop-keeping class, tradesmen and labourers (the latter of which comprise about one-fourth of the population of the district) are, for the most part, one and two-storied buildings, having slated and, in some instances, thatched roofs, earthen floors, as a rule, and contain from two to four apartments. These houses are faulty in construction, in many instances the lighting, ventilation, and air space being insufficient. About 100 of them are provided with midden privies, the remainder having no sanitary conveniences. Two hundred houses are without back yards, and where yards exist they are usually unpaved, undrained, and in a filthy state from accumulations of refuse of all kinds, which, when being removed, has to be brought through the dwelling-houses, there being no back entrances to any of the yards. In many instances pigs are kept in small confined yards close to dwellings, and without proper provision for drainage. These piggeries are usually kept in a very filthy state, and are a serious menace to the public health. The most insanitary localities in the district are—River-lane, Abbey-lane, Ball Alley-lane, Glebe-lane, Hanly's-lane, Pim's-lane, Pigeon-lane, Falvey's-lane, John-lane, and portion of Dublin-road. The houses in the last-named locality are subject to periodical floodings, during heavy rainfall.

A supply of water by gravitation from the river flowing from Arra Water Hills, about five miles distant from the town of Nenagh, was provided a few years ago at a cost of £9,500. The head waters of the river are derived from the rainfall and springs on the Arra Hills

about three miles from the intake at Newtown. The land in the catchment area is nearly all pasture land, a small portion only being tilled. Cattle have access to the river above the intake, and I am informed that farmers residing in the locality wash their sheep in the river during the season. These are, I believe, the chief sources of contamination of the water supply. The catchment reservoir covers three acres, and holds a six-weeks' supply for a population of 6,000, allowing twenty gallons per head per day. There are two filter-beds, which are renewed regularly; also a pure water basin. The water was analysed in December, 1899, and was pronounced of good quality. During periods of heavy rainfalls, which frequently occur in the district, the river overflows its banks, the storm-water getting into the reservoir and pure water tank, causing discoloration of the water in the distributing pipes. Eels have also been found in the pipes, which must have gained access through this cause. The water is conveyed in six-inch pipes from the reservoir to the town, to all parts of which it is distributed. The better-class houses are provided with domestic supplies, and about twenty-five fountains have been erected in different parts of the town for the supply of the poorer classes. The other sources of water supply in the district are two spring wells and a public pump. The water supply is reported to be ample for all purposes.

Sewerage  
and  
drainage.

There is no map of the system of sewerage in Nenagh, but from information supplied by Mr. Gill, c.s., Town Surveyor, and from personal observation I am enabled to furnish the following information. The sewers are, for the most part, constructed of rubble masonry, without flags in the bottom. Only the main streets are sewered, and in many instances the houses and premises are not connected. The connections which have been made are, for the most part, constructed with earthenware pipes, but the ventilation and trapping are in many cases defective. There are a few piped sewers constructed within recent years under proper supervision, but the old sewers are very defective and quite unsuited for existing requirements owing to the introduction of the water-carriage system of excrement disposal. The poorer class of houses are, with few exceptions, unprovided with any means of drainage except surface channels from yard to yard, or, in a few instances, rubble drains passing under the houses, which is most objectionable. The outfall of the sewerage is into the Clareen Stream at various points in its course through the town. This stream is covered over in part of its course, but flows in the open from where it enters the well-field at the side of the public road close to the old abbey. A very offensive effluvia is given off from this stream at all times, particularly during warm weather. During periods of heavy rainfall this stream overflows its banks and causes flooding of several houses in Dublin-road. The present arrangement for the disposal of sewage is a most defective one and calls for prompt remedy.

Refuse  
and  
excrement  
disposal.

The domestic scavenging of the district, which is very unsatisfactorily carried out by the occupiers of houses, might with advantage be undertaken by the Sanitary Authority. At present, manure, refuse, &c., from yards are, as a rule, only removed once or twice in the year, and the state of the yards in consequence is very insanitary, filth, &c., being scattered over the surface of the yards or deposited on the roadways in front of the houses. Ashpits are not provided except in the case of the better-class houses. Nine men with two horses and carts are employed in repairing and scavenging the streets,

which work is carried out in a fairly satisfactory manner. The manure depôt is off Cudville-road, and is fairly well isolated as regards dwellings, but is close to the road. The manure is disposed of every three months.

The excrement disposal is effected in a variety of ways. The better class of dwellings are provided with water-closets connected with the sewerage system. Others have midden privies, which are cleaned out at very irregular intervals, but the greater number of dwellings are unprovided with sanitary conveniences, the excrement being deposited on the manure heaps in the yards, or put into the nearest gully-trap on the street.

There are about fifteen cow-sheds and milk-shops in the district. The cow-sheds, with one or two exceptions, are structurally defective, badly drained, overcrowded, and kept in a filthy state. They are usually situate close to the dwelling-houses of the owners, and the manure is permitted to accumulate in large quantities in their vicinity. Milk is sold in the shops of the cow-keepers who, in some instances, sell groceries, vegetables, &c. There is no shop in the district used for the sale of milk exclusively. There are no dairies, properly speaking, in the district, the milk being delivered direct to the customers or disposed of in the shops. The dairies, cow-sheds, and milk-shops are not registered, and no supervision appears to be exercised over them. Dairies,  
cowsheds,  
and  
milkshops.

There are about 250 piggeries in the district, very few of which are suitable owing to their proximity to dwellings, defective drainage, &c. They are usually owned by the poorer class, and are kept in such a very filthy state as to be a source of danger to the public health. Keeping of  
animals on  
premises.

There are five slaughter-houses in the district. They are all situate close to dwellings with one exception, and are defective in construction, badly drained, and kept in a filthy state. Proper supervision is not exercised with regard to the condition of the slaughter-houses in the district, the removal of offal, &c. Slaughter-  
houses.

The common lodging-houses are not registered. There are about twenty such houses, only one of which could be considered fairly suitable. The others are not provided with sanitary conveniences, and are not, as a rule kept in a cleanly state. The space is too limited for the number of lodgers which are sometimes accommodated. Common  
lodging-  
houses.

There are about thirteen bake-houses in the district. Some, from their situation and surroundings, are unsuitable, and cleanliness is not, as a rule, sufficiently observed. Bake-  
houses.

Nenagh was constituted an urban district on the 1st April, 1900. Prior to that date the sanitary administration was in the hands of the Nenagh Rural District Council, which body provided a gravitation water supply for the urban district, and carried out some other minor sanitary works (sewerage, &c.) Sanitary  
adminis-  
tration.

The Urban District Council, which consists of twenty-one members, meets regularly once weekly. The necessary orders are made on the reports of the Medical Officer of Health and Sanitary Sub-Officer, and enforced when requisite. During the past nine months the Medical Officer of Health, Dr. Courtney, furnished 179 reports to the Sanitary Authority. The Sanitary Sub-Officer, Mr. Haugh, furnished 213 reports to the Medical Officer of Health and to the Sanitary Authority. The latter keeps a diary of the work he performs, and submits weekly reports to the Council. Since June last

179 notices were served for the abatement of nuisances; fifty-nine prosecutions were instituted for non-compliance with notices, which facts show a laudable disposition on the part of the Sanitary Authority to properly administer the Public Health Acts.

Hospital  
accommodation,  
etc.

The Fever Hospital at the Nenagh Union Workhouse is available for the reception and treatment of persons resident in the urban district suffering from any of the various forms of infectious disease. The fever ambulance at the Workhouse is unsuitable, and there is no disinfecting apparatus provided.

The adoption of the Infectious Disease (Notification) and (Prevention) Acts is under consideration by the Sanitary Authority; also a code of bye-laws under the Public Health Act relating to the following matters:—

1. Cleansing of footways and pavements.
2. Removal of refuse and cleansing of privies and ashpits.
3. With respect to nuisances and the keeping of animals.
4. Common lodging-houses.
5. Slaughter-houses.
6. Houses let in lodgings.
7. New buildings.

Recommendations.

The matters calling for the attention of the Sanitary Authority are as follows:—

1. The provision of a proper sewerage system for the district.
2. The prevention of the contamination of the water supply by floods, washing of sheep in rivers, &c.
3. Requiring owners of insanitary house property to put the houses in a sanitary condition, pave and drain yards, and provide sanitary conveniences.
4. Under Sections 52 and 54 of the Public Health (Ireland) Act, 1878, the Sanitary Authority should either undertake or contract for the domestic scavenging of the district, or by bye-laws impose this duty on the occupiers of premises.
5. Regulations should be adopted and enforced with respect to dairies, cow-sheds, and milk-shops.
6. Piggeries should be abolished where they are in close proximity to dwellings, or are likely to give rise to nuisances.
7. A disinfecting apparatus and ambulance for the conveyance of persons suffering from diseases of an infectious nature to hospital should be provided. As these are also required by the Rural Sanitary Authority, arrangements as to paying portion of the cost might be made with the latter body.
8. Common lodging-houses should be registered and regularly inspected.
9. More careful and systematic inspection of the district should be made by the Sanitary Sub-Officer with a view to the detection and abatement of nuisances.

THOMAS J. BROWNE,

Medical Inspector.

April, 1901.



## PEMBROKE.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE PEMBROKE URBAN  
DISTRICT.

BY DR. D. EDGAR FLINN.

The Pembroke Urban District is situated on the south side of the city of Dublin, and comprises within its area the important districts of Donnybrook, Ballshridge, Irishtown, and Sandymount; it may be regarded as one of the favourite residential suburbs of the city. Brief municipal history.

The area of the township is 1,623 acres, and the population in 1891 was 23,992.\* The valuation reaches to £109,424 10s., and the number of inhabited houses in 1891 was 3,579.\*

The following table is of interest showing as it does the increase of the population and valuation of the Pembroke urban area since 1840:—

Year.	Valuation.	Occupied Houses.	Population.
	£ s. d.		
1840. ... ..	18,000 0 0	—	—
1853. ... ..	53,732 0 0	1,267	13,200
1871. ... ..	71,169 15 0	2,686	20,983
1881. ... ..	92,069 5 0	3,137	23,122
1891,† ... ..	109,373 15 0	3,580	23,992

It is estimated that about one-half the urban area is still unbuilt on.

Several factories are included within the urban area, viz.:—iron works, bottle works, lead works, cement works, and wholesale bakeries. The principal electrical generating station of the Dublin Tramway system is also situated within the township.

The geological formation of the Pembroke Urban District area is composed principally of old river gravel and sands in some districts, and boulder clay under the gravel and sands in other parts, the solid rock foundation being the "calp" or middle carboniferous limestone which lies at a considerable depth in this area. The old river gravel and sands' area comprises the districts of Irishtown, Ringsend, and Sandymount. In the more eastern portions of the district the gravels are at a low level. Geological features.

The Council is composed of fifteen members, and the Sanitary Staff is composed as follows:— Sanitary administration.

Consulting Sanitary Officer—Dr. C. H. Chapman.

Medical Officer of Health—Dr. J. K. Denham.

Executive Sanitary Officer—Mr. J. C. Manly.

\* According to the Census returns of 1891 the population is 25,526 and the number of inhabited houses 3,903.

† Particulars in regard to 1901 as follows:—Valuation, £109,424 10s.; occupied houses 3,966; population, 25,364.

There are two Sanitary Sub-Officers, and recently a female Sanitary Sub-Officer was temporarily appointed. This latter officer and one of the male Sanitary Sub-Officers possess special Public Health certificates.

Acts of  
Parliament.

Special Acts of Parliament have been obtained at various intervals as follows:—

1. Pembroke Township Act, 1863.
2. Rathmines and Pembroke Main Drainage and Improvement Act, 1877.
3. Local Government (Ireland) Provisional Order Confirmation Act, 1894, relating to the acquisition of lands for the purposes of Part III. of the Housing of the Working Classes Act, and with the view of erecting a Refuse Destructor.
4. Electric Lighting Confirmation Act, 1896.
5. Local Government (Ireland) Provisional Order Confirmation Act, 1900, dealing with the formation of a Joint Hospital Board, &c.

The Council have their own Fire Brigade Department, and a loan has recently been sanctioned for building a new central Fire Station with all the most modern improvements.

Death-rate in the Donnybrook Registration District, which includes the Pembroke Urban District, and some small portions of the adjoining districts:—

				Mortality per 1000 (of the estimated population) from all causes.					Mortality per 1000 (of the estimated population) from the principal Zymotic Diseases.
1883.	...	...	...	210	1883.	...	...	...	17
1884.	...	...	...	228	1884.	...	...	...	38
1885.	...	...	...	207	1885.	...	...	...	28
1886.	...	...	...	214	1886.	...	...	...	22
1887.	...	...	...	216	1887.	...	...	...	31
1888.	...	...	...	195	1888.	...	...	...	16
1889.	...	...	...	182	1889.	...	...	...	16
1890.	...	...	...	206	1890.	...	...	...	17
1891.	...	...	...	192	1891.	...	...	...	60
1892.	...	...	...	207	1892.	...	...	...	12
1893.	...	...	...	179	1893.	...	...	...	20
1894.	...	...	...	172	1894.	...	...	...	12
1895.	...	...	...	196	1895.	...	...	...	15
1896.	...	...	...	196	1896.	...	...	...	21
1897.	...	...	...	207	1897.	...	...	...	23
1898.	...	...	...	201	1898.	...	...	...	16
1899.	...	...	...	216	1899.	...	...	...	30
1900.	...	...	...	202	1900.	...	...	...	17

The Urban Authority have their own electric lighting undertaking and Refuse Destructor works, and now light a considerable portion of the district. A site has also been obtained in conjunction with the Rathmines Urban District Council for the erection of a hospital for the treatment of infectious diseases.

The Council have recently had leased to them by the Earl of Pembroke in perpetuity, at a nominal rent (1s. per annum), thirty acres of land at Ringsend for the purpose of a public park and recreation ground. Lord Pembroke has also granted free of rent a plot of thirty-five acres near Clyde-road for a public park for the use of the inhabitants. A technical school has also been established in the district.

The Urban Council have erected a considerable number of houses for the working classes in both Donnybrook and Ringsend, and a further scheme entailing a large additional outlay has also been engaging the attention of the Council. The weekly rentals of the houses at present erected vary from 4s. to 4s. 6d. per week. These houses are largely used. At Ringsend there are forty cottages, and at Donnybrook there are 105. In addition to the houses erected by the Council about 300 have also been built by the Earl of Pembroke and the Dublin Tramway Company. Further accommodation is yet, however, required for the working classes, notably at Ringsend, where some of the inhabited areas are not satisfactory from a sanitary point of view. At Clonskeagh also there are a large number of cottages which cannot be regarded as healthy areas, and which need improvement. It must, however, be considered that the Council have endeavoured, and are yet making strenuous efforts, to deal with this important question. About £27,000 has been, or is being, spent by the Council in providing dwellings for the working classes.

The Pembroke township, in conjunction with the township of Rathmines, promoted a Main Drainage Bill in 1877, and the works were completed in June, 1881, from plans devised by Mr. Richard Hassard, C.E., and Sir John Hawkshaw, C.E. The scheme appears to have suited both districts admirably, the sewage being discharged in deep water at the ebb tide at a point in the estuary of the Liffey.

The sewers of the district are, for the most part, constructed of stoneware socketed pipes or brick, backed with concrete "egg-shaped" culverts, the exceptions being rubble sewers with flagged or brick inverts and flagged covering.

The pumps at the Rathmines and Pembroke Main Drainage Board's pumping station, London-bridge, raise the sewage (about 3,000,000 gallons in dry, and 30,000,000 per diem in wet weather) from the low level to the high level and main outfall sewer, which discharges the sewage into the estuary of the Liffey at a place called the White Bank, half way between the Pigeon House Fort and the Poolbeg Lighthouse.

The sewage is only discharged at the outfall during four hours of the six hours' ebb tide, that is from an hour after high water till an hour below low water.

All pipe sewers and drains connected with them, which have been constructed in this district since July, 1896, have been laid on a carefully-graded concrete bed in straight lines between manholes, and carefully jointed with tarred gaskin and cement.

The general system of ventilation is by street surface ventilators, but in the Sandymount district "sewer gas destructor" ventilators and shaft ventilators are used in addition to the surface ventilators.

In the same district automatic flushing tanks are fitted to some of the sewers.

**House drainage.** All drains to new houses are inspected and tested by the District Surveyor or his assistant, and all new drains to old buildings are inspected and tested at the request of either the occupier of the house or the contractor or other person or persons interested.

**Water supply.** The water supply for the district (which is derived from the Vartry system) is taken from the City of Dublin Corporation's water mains at three points within the district, that is to say:

- I. In Mespil-road, near Lecson-street Bridge. This is known as the Lecson-street Supply.
- II. In Morehampton-road, corner of Belmont-avenue, known as the Belmont Supply.
- III. In Anglessea-road, near Anglessea Bridge, known as the Simonscourt Supply.

All the distributing mains of these supplies are connected with each other at various points, so that in the event of changing a meter at the intake of any of the three supplies the district to which the intake belongs can be supplied from the distributing mains of the other districts.

The supply at the intake passes through meters of the Corporation and check meters of the Pembroke Urban District Council.

All new houses are compelled to have a half-inch separate service pipe taken direct from the distributing mains, and all the joint services that did exist are gradually being replaced by separate service pipes.

The average supply per head per diem is twenty gallons. The water rate at present is 6d. in the pound. The supply is paid for by the Council as follows:— $3\frac{1}{2}$ d. in the pound on the valuation for a supply of twenty gallons per head; everything over that quantity at  $3\frac{1}{2}$ d. per 1,000 gallons.

**Public cleansing.** The public cleansing of the district, as a whole, is satisfactorily carried out, and the area generally under the jurisdiction of the Council is well attended to in this respect. The scavenging staff consists of thirty scavengers, and there are fifteen horses employed with attendants for the purposes of cleansing and removing all refuse from streets, roads, and laneways. In the smaller laneways and thoroughfares there are occasionally to be seen deposits of refuse; these localities require most constant supervision and attention on the part of the Sanitary Sub-Officers.

**Domestic cleansing.** A system of domestic cleansing and ashpit refuse removal has been in operation since 1889, and, I am informed, it has had satisfactory results, the system being very largely used. A charge of 5s. 4

made for each cleansing. The work is carried out under the immediate supervision of a special domestic scavenging staff consisting of twelve labourers, whose duties are, I understand, limited to their work. The Council would do well to consider the advisability of extending this system whereby the refuse from the dwellings inhabited by the labouring classes could be removed free of any cost to the occupiers as is done in some towns with very beneficial results.

The "pail" system of refuse removal was also introduced into the township in 1894. It was originally intended for the tenement houses and smaller class of dwellings, but latterly it would appear that there is a tendency to its becoming more generally used. At the present time there are considerably over 1,000 pails in use, the contents of which are removed daily at an early hour each morning.

The system is very much to be commended, and the Council deserve credit for its introduction, and should endeavour to extend its operation generally through the urban district. More especially is this system of daily refuse removal necessary in the smaller and congested laneways where there are small cottage houses with indifferent back-yard accommodation. The daily removal of refuse from houses such as these is a distinct gain and advantage to the public health of a district, as, if the soil near a dwelling is allowed to become impregnated with filth and organic refuse accumulation, a condition which is generally the rule in these localities, the air must naturally become vitiated, and there is the consequent danger of disease germs being carried to other houses, hence the advantage of the daily removal of refuse from all dwelling-houses, but more particularly small cottage dwellings.

The District Council have adopted the Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890. The notification of infectious diseases is regarded as an advantage, and since the adoption of these Acts their administration has been stringently adhered to.

The number of cases notified during the year 1900, and up to the end of March, 1901, was 443.

There are six registered slaughter-houses and, as a rule, they are all well kept, and are periodically inspected. There are thirty-four registered dairies within the district.

There are no common lodging-houses.

There is a modern ambulance carriage for the conveyance of cases of infectious disease to hospital, and also a separate conveyance for disinfected clothing. In addition there is an accident ambulance, which has proved of great service. Thirty-two cases were removed to hospital in this ambulance during the past year.

There are a large number of registered cow-sheds and dairies within the urban area. In one or two of those that I visited the regulations as to ventilation and cubic space for each cow were not strictly enforced, and pigs in some instances were kept in too close proximity to cow-sheds. This is very objectionable from a health point of view, and should on no account be permitted. A regular and systematic inspection of all cow-sheds and dairies is very

necessary, and the fulfilment of the regulations should be insisted on in every particular.

Number of inspections of cow-sheds (yards), dairies, and milkshops, . . . . .	1,736
Number of cases in which regulations were found not complied with, . . . . .	54
Notices served, . . . . .	15
Summonses issued for breaches of regulations, . . . . .	12
Infectious illness known to exist in any family of a dairy-man, cow-keeper, or milk purveyor, . . . . .	0

System of  
refuse  
destruction.

A Refuse Destructor, which, I am informed, answers its purpose admirably, was erected some short time since by the Council. I am indebted to Mr. Sydney Price, the resident engineer, for the following particulars in regard to its working:—

The refuse destructor, which has been dealing with the refuse of the above township for the past year was installed by the Horsefall Furnace Syndicate, and has been, up to the present, giving very satisfactory results.

It is divided into four cells, each capable of dealing with eight tons of refuse per diem. Each cell has a total floor surface of fifty square feet, which is divided into two parts, namely, the drying hearth, where the refuse is first deposited for the purpose of drying, and the grate where actual cremation takes place. The former is constructed of solid brickwork, but the latter is made up of iron bars placed closely together. Through these bars a steam blast is played for the purpose of assisting cremation. The fumes from the refuse undergoing the drying process at the back of the chamber are carried forward over that portion where combustion is actually taking place, and are there cremated, the residual gases then passing through the uptake at the front end of the cell, and so, into the combustion chamber.

From there they are drawn down into the main flue, from which they may either pass between the tubes of the Babcock boiler for the purpose of generating steam on their way to the chimney, or, by opening a damper, escape by means of a by-pass direct up the shaft.

The residual clinker drawn out of the cells after combustion is complete is perfectly odourless, is of a hard nature, and makes excellent concrete, or "topping" for paths. The average amount of refuse destroyed during the week is ninety-three tons, or about 102 loads of an average weight of 18 cwt. per load, and the average number of loads per day is seventeen. The majority of this is house refuse of a fairly dry combustible nature.

Three refuse stokers are constantly employed in the work, a fourth being engaged during a part of the week removing clinker. The work is divided into two shifts—a day and an evening—one man being employed during the day-time and two during the evening, when steam is mostly needed. A good deal of skill is required in stoking the refuse in order to obtain anything like satisfactory results from a steam-generating point of view.

Summary of sanitary work done during the year 1900 and up to the end of March, 1901 :—

Number of premises inspected, . . . . .	21,200
Number of nuisances found to exist for which notices were served, . . . . .	1,329
Number of nuisances abated, . . . . .	1,576
Number of prosecutions instituted under the Public Health Acts for non-compliance with notice or magistrates' order, . . . . .	147
Number of special notices served, . . . . .	262
Warrants issued, . . . . .	55
Number of reports sent to Medical Officers, . . . . .	60
Number of reports received from Medical Officers, . . . . .	44
Number of cases of infectious diseases removed in ambulance, . . . . .	110
Number of rooms disinfected, . . . . .	91
Number of articles of clothing disinfected or destroyed, . . . . .	1,494
Number of rooms limewashed, . . . . .	2,881

Houses unfit for human habitation :—

Medical certificates as to unfitness received, . . . . .	12
Notices served, . . . . .	40
Summonses issued, . . . . .	10
Closing orders obtained, . . . . .	8
Opening orders, . . . . .	1

Number of drains, water-closets, cesspools, ashpits, privies, and yards cleaned and repaired, and house drains connected on notice :—

New water-closets, . . . . .	69
Drains cleaned and repaired, . . . . .	299
Ashpits cleaned, . . . . .	424
Privies abolished, . . . . .	19
Privies cleaned, . . . . .	157
Yards cleaned, . . . . .	568
Yards paved, . . . . .	19
New drains constructed, . . . . .	47

Bye-laws are in force in regard to buildings, houses let in lodgings other than common lodging-houses, nuisances, weights and measures, &c. Regulations have also been adopted for the management of dairies, cow-sheds, and milk-shops.

I have to thank the Medical Officers, the Executive Sanitary Officer, and the Township Surveyor for the assistance they were kind enough to give me during the course of my inquiries.

D. EDGAR FLINN,

Medical Inspector.

March, 1901.

## PORTADOWN.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE PORTADOWN URBAN  
DISTRICT.Origin of  
town.

The manor in the reign of Charles I. was bestowed on John Obyers, who erected a mansion and a few houses, which afterwards became the town of Portadown. Portadown is a prosperous market and manufacturing town in the County Armagh, twenty-five miles south-west of Belfast, and situated on the banks of the River Bann. It is an important railway junction of the Great Northern Railway of Ireland.

The Newry canal, which joins the Bann about a mile from the town, opens a water communication from Carlingford Lough, and the river itself being navigable for vessels of small tonnage all the way to Lough Neagh, a ready means of communication is afforded by lighters and barges from Belfast and all towns adjoining the Lough.

The ancient name of the town was Port-ne-deon, or the port of the fortified eminence.

It has increased rapidly within the last half century, the population in 1816 being 600, while it is now estimated at 10,000.

The population in 1891 was 8,430.

The greater part of the town stands on rising ground. There are nine large weaving factories and a spinning mill within the urban area.

The manufacture of linen and cambric is extensively carried on.

A lease of land to the extent of 23 acres was obtained some years ago from the Duke of Manchester for a public park. It has been laid out and planted. This was taken over by the Town Council on November 1st, 1894.

The Urban Council is composed of fifteen members. The officers  
Sanitary  
Authority. are:—

		£
Clerk to Council,	Mr. R. McClatchey,	Salary, 215.
Executive Sanitary Officer,	"	10
Town Surveyor,	Mr. Wilson.	42
Town Constable,	"	47
Sanitary Sub-Officer,	"	10
Medical Officer of Health,	Dr. Rowlett.	10
Medical Officer of Health appointed in August, 1899.		

Area.

Portadown urban district has an area of 764 acres, 2 rods, and 7 perches. The number of inhabited houses in this area is about 2,408, with ten factories and seventy-four land ratings.



The present outstanding loans against the Urban District Council, I am informed, amount to £4,595 8s. 9d. Indebtedness.

	£	s.	d.
Present valuation, . . . . .	24,531	0	0
Present borrowing powers, . . . . .	41,000	0	0

The following is a record of result of boring for artesian well, Geological formation.  
422 feet deep:—

	feet.
Yellow clay, . . . . .	15
Hard dry sand, pebble and boulder, . . . . .	50
Hard, black clay, . . . . .	22
Black sand, . . . . .	8
Hard, blue clay and pebble, . . . . .	30
Brown pebble and clay, . . . . .	20
Rough granite, . . . . .	7
Brown pebble, . . . . .	45
Mixture of rotten stone, . . . . .	13
Hard pebble, . . . . .	2
Changeable, . . . . .	2 equal 214
Black rock, . . . . .	160
Red and white sandstone, finishing in red sandstone, . . . . .	48 „ 208
	<hr/> 422

Until the passing of the Local Government (Ireland) Act all roads within the district were under the control of the Grand Jury. After the passing of this Act, the Urban Council applied to the County Council to get separation from the county on the terms provided by the Act. The County Council refused this application. The Urban Council then appealed to the Local Government Board, in accordance with the terms of the said Act. The Local Government Board adjourned their Inquiry, pending the decision of the County Council as to the main roads.

On the 30th September, 1899, the County Council declared all roads in the county to be main roads. The Urban District Councils of Tanderagee, Armagh, and Portadown, objecting to this decision, the Local Government Board held an Inquiry, the result being that they decided that only leading roads in the county be considered main roads. According to this decision the following are the main district roads within the urban district of Portadown:—

Bridge-street (Edenderry), Bridge-street, High-street, Market-square, and Church-street; Carrickblacken-road, West-street, Thomas-street, Woodhouse Obin-street, Castle-street, Garvagh-road, Watson-street, Edward-street, Portmore, William-street, Carleton, and Park-road.

Total length of these streets amounts to 5 miles and 36 perches. Annual cost of maintenance amounts to £677 10s. 6d.

District roads extend to 3 miles, 4 furlongs, and 31 perches. Annual cost of maintenance, £137 5s. 7d.

Streets not taken over by the Urban Council, 2 miles and 4 furlongs.

Total mileage in the urban district:—

	Miles.	Fur.	Per.
Main roads, . . . . .	5	0	36
District roads, . . . . .	3	4	31
Streets not taken over, . . . . .	2	4	0
	<hr/> 11	<hr/> 1	<hr/> 27
New streets in course of construction, . . . . .		5	0
	<hr/>	<hr/>	<hr/>
Total, . . . . .	11	6	27

At present all roads are contracted for by the Surveyor, on behalf of the Council. All the material used is obtained by contract with a quarry-owner, who delivers the broken stone on the streets, and it is then spread by the Council's own men. The stone used is known as Whinstone.

A good deal of steam-rolling has been done during the last seven years; in this case the roller is hired.

Street cleansing. The cleansing of the town streets is performed by a staff of workmen employed by the Council, and under the immediate control of the Surveyor, who is responsible for the carrying out of the work.

All sweepings of the streets are carted to ground owned by the Council, who put it in heaps, and afterwards it is sold to the farmers by auction. At present there is a staff of about twenty-two workmen employed by the Council, who carry out all such work under the control of the Surveyor.

*Births.*

Birth and death rate. Birth-rate per 1,000 of population (8,430):—

1890, . . . . .	27.5
1891, . . . . .	27.6
1899, . . . . .	36
1900, . . . . .	36.4

Estimated birth-rate per 1,000 on a population of 10,000 for year

1900, . . . . .	30.7
-----------------	------

Estimated birth-rate in 1900 shows an increase of 3.1 per 1,000 on year 1891.

*Deaths.*

Death-rate per 1,000 of population (8,430):—

	Zymotic.
1890, . . . . .	1.3
1891, . . . . .	1.542
1899, . . . . .	3.422
1900, . . . . .	1.186

Estimated death-rate per 1,000 on a population of 10,000 for year

	Zymotic.
1900, . . . . .	1

Estimated death-rate for 1900 shows a decrease of 2 per 1,000 of deaths from all causes, and a decrease of 542 per 1,000 of zymotic diseases on year 1891.

There are thirty-two wells fitted with pumps for the public supply of water, conveniently situated throughout the district; most of these wells have been sunk over a quarter of a century. Ten have been sunk within the last ten years. Only two of the wells have been cleansed out during the past ten years.

The water supply during the months of August and September is generally very poor, and in the year 1899 nine of these pumps ran dry.

Samples of water for analysis from five wells were condemned, and the Urban Council ceased to forward samples for analysis.

The wells in some localities are situated close to stone-built sewers, notably in Montague-street, High-street, and Market-street. As the soil of the town of Portadown must be more or less polluted by soakage from these stone-built sewers, badly-paved yards, and uncemented floors of cess-pits, there is a serious danger caused to the public health by the use of these mason-built sewers.

Almost all the main sewers laid within the last thirty years are glazed, and flanged earthenware pipes jointed with clay.

The main sewers running from the lower part of Church-street, West-street, through Market-street, and High-street, are built with stone and lime, receiving the sewage from side streets, and discharging into the River Bann, close to the bridge, on north-western side of the river.

The sewers in Edgarstown are principally glazed flanged earthenware pipes, jointed with clay, but those in Sarah-street, Union, and lower part of Montague-street, are stone-built sewers; they unite at the lower end of Montague-street, and discharge into the Corrain river, a tributary of the River Bann.

An experimental septic tank was constructed to purify the sewage before being discharged into the river, but as it was placed at too low a level, it proves useless for the greater part of the year, the effluent from filter beds being dammed by the river.

The sewage from Jervis-street is conveyed by 9-inch glazed flanged earthenware pipes, jointed with concrete, to a covered tank in Pork market, and pumped from this by a gas engine through a five-inch metal pipe, jointed with gaskin and lead, and discharged into West-street sewer at the junction of the rising main with the West-street sewer. There is here a manhole, covered with a metal lid, sitting in a groove filled with oil.

The sewage from the Tavanagh district is conveyed through glazed, flanged, earthenware pipes, jointed with clay, and discharging into the Armagh River, a tributary of the River Bann.

The sewage from Edenderry is conveyed in glazed and flanged earthenware pipes, jointed with clay.

The sewage from Lurgan-road and the Carrickblacken-road joins at Watson-street, and discharges into the River Bann at the bridge on the south-east side.

Practically none of the sewers are ventilated, except what ventilation is afforded by untrapped house drains from the yards. No drain, so far as can be ascertained, is trapped at the main sewer.

The buildings in the main thoroughfares, both shops and dwellings, are substantially built, but in some cases there does not seem sufficient air space.

House  
accommodation.

The majority of the houses of the working-classes are two-storey houses having kitchen and parlour on the ground floor; built of brick; outer wall 9 inches thick, inner wall  $4\frac{1}{2}$  inches; plastered externally; an open fireplace in the kitchen, which is usually tiled or concreted; "but in a considerable number of the smaller and inferior class of houses in the town the floors are clay." The houses generally are fairly well ventilated.

The yards varied very much in condition, some being well paved or concreted, but a large number were either wholly unpaved or the surface was of such an irregular character that water and slops stand in pools.

The privy and ashpit accommodation for the smaller houses in Portadown in a large number of cases was most unsatisfactory.

Very few of either the privies or ashpits were concreted, so as to prevent soakage of contents into the surrounding soil. The ashpits in the majority of cases were uncovered, and, in a large number of cases, both privies and ashpits were faulty in construction and out of repair.

In the yards that are paved the gully traps, being of the bell type and set in a frame of wood, are almost useless. These drains are not trapped at their junction with the main sewer, for which they practically serve as ventilators, discharging sewer gas close to the windows of the sleeping apartments in certain houses.

There are in Portadown about 140 houses without back doors; generally these are only one-storey houses, having only one room sub-divided by wooden partitions. The floors are, in a large majority of cases, composed of beaten clay. These houses are very old, and many of them quite unfit for human habitation. Houses of this class are to be found in fifteen streets.

Excre-  
ment and  
refuse  
disposal.

There are about fifteen streets or courts where the contents of the privies and ashpits are removed through the dwelling-houses.

In the town of Portadown the privies and ashpits number 1,884; water-closets, 215. Out of this number only ten have disconnecting traps. As the number of houses in Portadown is 2,408, these figures give 309 houses in the town without any sanitary accommodation.

Some few of these houses have privies and ashpits—two privies being provided for four houses—but the large majority are unprovided in any way with sanitary accommodation.

As will be seen from numbers given, about 1,884 houses have closet accommodation, which is almost exclusively of the cesspit privy type. Some of the cesspits have brick sides, a few have brick bottoms; but, generally, the bottoms are composed of clay. Other cesspits are merely holes in the ground.

As to the construction of the privies, some are built of brick, some of stone, and a large number of wood; very many are in a dilapidated state, and a great number quite unfit for use. A very large number were in need of cleansing when I saw them.

With very few exceptions were the walls and floors of the privies and cesspools cemented. In the large majority of cases the cesspools were uncovered, the contents of privies discharging into them making a great nuisance, and as the contents must soak into the surrounding soil, this causes a grave danger to the public health.

In a considerable number of cases these cesspit privies were placed in too close proximity to the dwelling-houses.

Numerous large accumulations of general house refuse and filth were met with by me during my inspection, and nuisances arising from the storage of manure. I was informed that in the summer months these nuisances are more general, as in the winter and spring large quantities of the manure are removed by the farmers, but in the summer months it is allowed to accumulate.

The Urban Council do not undertake the removal of house refuse. This is left to the occupiers; but as they are largely dependent, in the great majority of cases, upon the farmers who may require it for manure, it is very inefficiently carried out.

So far as I could ascertain, no bye-laws for the regulation of Slaughter-houses have been framed. The slaughter-houses are, however, ever, inspected once a month, and are five in number.

The following is the result of my inspection of the slaughter-houses:—

Mr. JOHN JONES, Market-street.

Good yard (slaughter). Offal and blood carted to farm. In the yard, at date of my visit, there was a large heap of manure, with a quantity of decayed fish on it. This manure should not have been allowed to accumulate.

Yard attached to dwelling-house was badly paved and uneven.

Mr. JAMES TOTTON, Thomas-street.

Slaughter-yard good. Blood and offal removed to farm.

Mr. ROBERT FOY, West-street.

Slaughter-yard badly paved, allowing of soakage into the soil. A large heap of manure close to the slaughter-house.

Mrs. ROSE M'CONVILLE, West-street.

Slaughter-house in good order. Manure heap is too close to the slaughter-house, and should be removed to a greater distance.

Blood and offal was, at date of my visit, on this manure heap. I was informed it was removed once a week. Blood and offal should be removed day of slaughter.

Yard attached to dwelling badly, and only partially, paved.

WILLIAM TWEEDIE, Bridge-street.

Slaughter-house commented. Some repairs and improvements were being executed here at date of my inspection.

There was a quantity of bones and offal in the slaughter-house at the date of my visit. Apparently they had been there for some time; otherwise the slaughter-house was in good order.

These are inspected once a month, and are seven in number.

So far as I could ascertain, they are not registered, nor are there any bye-laws in force for the regulation of such houses.

The Urban Council have not adopted any regulations for the management of dairies, cowsheds, and milkshops. This is a question they should, I think, take into consideration at once.

On inquiry I ascertained that there are at least seventy dairy owners in the Portadown urban area. Forty-four persons keep cows within the district for their private use. Total number of cows kept in the town amounts to 313.

Common  
lodging-  
houses.

Dairies  
and  
cowsheds.

I inspected a number of these dairies and found, as a rule, that the ventilation was insufficient and the drainage defective. In no case should the trap of the drain be placed within the hyre, and care should be taken that the trap is of a good type, so as to prevent the sewer gas escaping from the main sewers into the hyres. This is especially desirable in cases where the milking of cows is carried on in the hyres, in order to avoid any possible contamination of the milk from this source.

**Insanitary premises.** I gathered the following particulars at my inspection in regard to what may be considered perhaps the most insanitary part of the district.

#### CARRICKBLACKEN-ROAD:

There are four houses in this street without any back doors, but there is a passage to the rear; these houses have only two privies, but there are four ashpits, which are not covered or cemented. The privies discharge into the ashpits, converting them into offensive cesspools, situated only nine feet from the windows of the houses.

The yard is composed of clay, while the privies are faulty in construction.

#### BRIGHT-STREET:

Yard unpaved. Privies and ashpits badly constructed, and neither the walls nor floors cemented. Three houses out of four had no back doors. Eight houses on the other side of the street had yards, but they were too small and were not paved. The privies of these houses were badly constructed and not cleansed often enough. I found in a number of other houses that there were no back doors; that the yards were unpaved, and the privies and ashpits badly constructed. Refuse from these houses is thrown out on the street, and in some cases, when the privies and cesspits are being emptied, the contents are carried through the houses.

#### JAMES-STREET:

Badly paved yards. Privies and ashpits not cemented, some of the latter being only holes in the ground.

#### ARMSTRONG'S-ROW:

Badly paved yards.

#### JOSEPH-STREET:

Yards not paved, and the contents of the privies and ashpits carried through the houses.

#### FLORENCE-COURT:

Privies and ashpits uncemented, and on one side of the road the ashpits were not covered.

#### WATSON'S-LANE:

Found ashpits uncovered, neither the walls nor the floors being cemented, while the contents of privies discharged into them.

#### BRIDGE-STREET:

No. 62 to 68. Contents of privies and ashpits removed through the dwelling-houses.

## FOUNDRY-STREET :

Some of the houses in this street have good tiled yards, but the privies are in had repair; others have fairly good privies and ash-pits, but the yards are unpaved.

## CASTLE-STREET—EAST SIDE :

Some of the privies are in very had order, the ash-pits are uncovered, and the contents are not removed sufficiently often. In the large majority of the houses in this street the contents of the privies and ash-pits have to be removed through the dwelling-houses.

## WEST SIDE :

The yards are cemented, but the ash-pits are not covered, nor are the walls and floors cemented. Refuse is removed through the houses.

## FRANCIS-STREET :

Privies badly constructed. Ash-pits uncovered, and neither the walls nor the floors cemented. These ash-pits are practically cess-pits, and are within  $2\frac{1}{2}$  feet of the windows of the dwelling-houses in some cases. The contents of the privies and ash-pits are removed through the dwelling-houses. The yards are cobble paving of a very had description.

## OPPOSITE SIDE OF THE STREET :

The yards are slightly larger, but the privies and cess-pits are at most only 5 feet from the dwelling-house. Ash-pits and privies are in very much the same condition as those on the opposite side of the street. This is a most insanitary area.

## MARLEY-TERRACE :

Clay yards. Floors and walls of privies and ash-pits uncemented.

## WATER-STREET :

Ash-pits not cleaned out sufficiently often, and in some of the yards feculent matter was lying about.

## VICTORIA-TERRACE :

Ash-pits uncovered; neither walls nor floors are cemented. The contents are not removed sufficiently often.

## PARK-ROAD :

Privies and cess-pits in a filthy condition. Yards very small and badly paved with cobble stones.

## CURRAN-STREET :

In this street there are a large number of small thatched houses which, in their present condition, are hardly fit for human habitation.

The ash-pits are uncovered, and neither the walls nor the floors cemented. The privies are in a dilapidated condition, both privies and cess-pits being full of all sorts of filth. The yards were composed of clay and kept in a dirty condition.

In another part of this street there are some houses of a better class, but the yards are badly paved. The contents of the privies and ash-pits have to be removed through the dwelling-houses.

In another portion of the same street the ash-pits are uncovered

and uncemented. The contents of the privies often discharge into these ashpits, making them practically cesspits. The yards are of clay, and kept in a bad condition. In a very large number of the houses in this street there is no way of removing the contents of privies and cesspits except through the dwelling-houses; this applies especially to the south-east end of the street.

#### FULTON'S-COURT :

There are seven houses in this court without back doors or yards. The privies and ashpits are opposite the houses, and are not kept in a cleanly state. Behind these houses is a large bank of clay, the moisture from which soaks into the houses, causing them to be most unhealthy dwellings. These houses consist practically of one room, divided by a partition going up half-way to the roof; the average number of inmates would be five or six. These houses, though fairly well built, are damp, and the inhabitants have not sufficient air space.

#### OBIN-STREET :

In a large number of the houses in this street the contents of the privies and cesspits have to be removed through the dwelling-house. The yards, generally speaking, are small, and are kept in a filthy condition. Several of these houses are not fit for human habitation.

#### RIVER-LANE :

Privies and cesspits are faulty in construction, neither the walls nor floors being cemented, and both are kept in bad order. In the yards, which are very small, feculent matter was lying about. Several of these houses are unfit for human habitation. One house consisted of one room, about 12 feet by 13, in which lived one adult and two children. In a large number of the houses the contents of the privies and cesspits are removed through the dwelling-houses.

The insanitary condition of this locality has been on several occasions brought under the notice of the Urban Council by their Medical Officer of Health, but until very recently nothing was done in the matter. I am informed that lately notices have been issued for the abatement of nuisances in this locality.

#### JOHN-STREET :

The yards attached to the houses in this street are either clay or very badly paved. Neither the walls nor the floors of the privies and cesspits are cemented, and they are kept in a filthy condition. In nearly all of the houses in this street the contents of privies and cesspits have to be removed through the dwelling-houses.

#### FOX'S-COURT :

The yards are small and kept in a filthy condition. The privies and cesspits are badly constructed and were full of filth. The houses in this court consist of one room. A very high wall is right in front of the houses, distant only about 4 feet from the windows, which prevents free circulation of air. From the situation, size, and general sanitary condition of these houses, I am of opinion that they are not fit for human habitation. The refuse from the privies and cesspits is removed through the dwelling-houses.



## BRICK-YARD:

The privies and cesspits are situate in small yards, are faulty in construction, kept in a filthy condition, and the contents removed through the dwelling-houses. These privies and cesspits are built in very close proximity to the dwelling-houses. The floors of the houses are, generally speaking, made of clay. The sanitary condition of this locality is most unsatisfactory.

## WOOLHOUSE-STREET:

In several of the houses in this street, which is one of the principal streets in the town, the contents of the privies and cesspits are removed through the dwelling-houses. The yards, as a rule, are badly paved and small.

## FOWLER'S "ENTRY":

The privies and cesspits attached to some of the houses in this "entry" are placed right up against the windows of the sleeping apartments. The yards are very small and badly paved. The refuse from the privies and cesspits in many cases is removed through the dwelling-houses.

In the following places inspected by me, the sanitary conditions referred to in above list existed generally, the privies and cesspits being badly constructed and not kept in a cleanly condition; the yards being small, and either badly paved or made of clay, and the contents of the privies and cesspits removed, in some cases, through the dwelling-houses:—

David-street, Dawson's-court, Church-lane, West-street, Mary-street, Morrison's-court, Cinamon's-court, Irvine-street, Henry-street, Russell-street, Montague-street, Sarah-street, Union-street, Charles-street, Moore's-row, and Meadow-lane.

Except a hospital for cholera, situated on the Armagh-road, which has accommodation for twenty patients, the only accommodation for cases of zymotic diseases is that afforded by the Fever Hospital attached to the Workhouse at Lurgan. Hospital accommodation.

Summary of inspections made by Sanitary Sub-Officers for the year 1900, and the month of January, 1901:—

1900.	
January, . . .	36 yards and premises.
February, . . .	86 "
March, . . .	64 "
April, . . .	102 "
May, . . .	86 "
June, . . .	86 "
July, . . .	62 "
August, . . .	46 "
September, . . .	44 "
October, . . .	64 "
November, . . .	— "
December, . . .	72 "
1901.	
January, . . .	84 "

Sanitary reports made by Medical Officer of Health:—

1900, . . . . .	68
1901 to middle of February, . . . . .	24

Recom-  
menda-  
tions.

The several insanitary conditions in the Portadown urban district which I have above indicated, manifestly call for action on the part of the Urban Council more vigorous than that heretofore adopted. Above all, it is essential that they should no longer delay taking steps to adopt a more perfect system of sewerage; the stone-built sewers should be replaced by piped sewers, so as to prevent soakage into the surrounding soil of deleterious matter. The sanitary authority should obtain the advice of a competent engineer as to the best possible scheme to adopt to have the sewage purified before its discharge into the rivers, or adopt some system of septic tanks for final disposal of sewage.

A supply of good potable water is urgently required. This subject, however, is, I understand, at present under consideration.

The Urban Council should give thorough and systematic attention to insanitary premises in their district, and exercise the various powers they possess or can obtain to remedy their condition. In particular, they should deal with houses unfit for human habitation. The Medical Officer of Health might be asked to make a detailed report on this subject.

The Urban Council would do well to see that the house drains connecting with the main sewers are fitted with disconnecting traps of modern type, to prevent escape of sewer gas into the dwelling-houses.

The back yards should, I think, be better paved, so as to prevent soakage of deleterious matter into the surrounding soil.

The Urban Council would do well to see that the privies and ashpits in the town are cleansed more frequently; and the Council would do well to undertake this work themselves, in pursuance of the provisions of section 52 of the Public Health (Ireland) Act, 1878, or make bye-laws on the subject under section 54 of the Act.

Bye-laws should be adopted compelling owners to provide privies built of stone or brick. Ashpits to be covered; walls and floors of both to be cemented, so as to prevent soakage of contents into the surrounding soil.

The system under which the contents of the privies and cesspits are conveyed through the dwelling-houses should be abolished, as it is a fruitful source of enteric fever.

Regulations for the management of dairies, cowsheds, and milk-shops should be made as soon as possible.

Mr. Wilson, the present Sanitary Sub-Officer, so far as the time at his disposal allows, performs his work very well, but he has so many other duties to perform he cannot give the necessary time to his duties as Sanitary Sub-Officer.

The Urban Council would do well to take into consideration the desirability of adopting the Infectious Disease (Prevention) Act, 1890, in their district.

So far as I could ascertain there are no bye-laws in force regarding common lodging-houses or slaughter-yards. These matters should receive the attention of the Urban Council.

CUTHBERT J. CLIBBORN,

Medical Inspector.

March, 1901.

## QUEENSTOWN.

### REPORT ON THE SANITARY CIRCUMSTANCES AND ADMINISTRATION OF THE QUEENSTOWN URBAN DISTRICT.

BY DR. T. J. BROWNE.

The urban district of Queenstown comprises an area of 545 acres, and is situate on the south side of the Great Island in the Union of Cork, and East Riding of county Cork. The town of Queenstown is built on sloping ground, rising from the shore of Cork Harbour to an elevation of over 300 feet. The population of the district in 1891 was 9,082, and the number of inhabited houses at present is 1,100. During the year 1900 the birth-rate was 24·2, the death-rate from all causes 20·8, and from the principal zymotic diseases 2·4 per 1,000 of the population. The total valuation of the district is £23,727 12s. The outstanding liabilities on the 31st March, 1901, amounted to £32,688 5s. 9d., and the total rates levied during the past year amounted to 8s. in the pound.

The working-class population is engaged chiefly at maritime pursuits and at the Naval Docks, Haulbowline Island. With these exceptions, there are no local industries of any consequence.

The houses in the district, generally speaking, are of a substantial class, well drained and provided with sanitary conveniences and water supplies. In the town proper, owing to the formation of the ground, there is considerable crowding of houses on space. Many houses are built close up to the rock or earth in the rear, and immediately above are other houses similarly built. Nearly half of the total number of houses in the district are tenemental dwellings, three-storied, and having an average of four families resident in each house. Overcrowding is very general. In many instances a family consisting of several individuals is housed in one small apartment. The back yards are very small and generally contain midden privies and ashpits common to all the occupants, and are kept in a very dirty state. Midden privies under such circumstances are most objectionable, and impossible to keep in a sanitary condition. They should be abolished and water-closets substituted. A very pressing necessity exists for additional housing accommodation for the working classes in the district. The overcrowding has recently given rise to outbreaks of typhus fever. A considerable sum of money has been spent recently in removing insanitary dwellings, but these have not been replaced by new buildings.

The water supply of the district up till recently has been insufficient and of doubtful quality. Works have been in progress for the past three years to provide a water supply by gravitation from

Tihhetstown, about eight miles distant. Already about £14,000 has been expended, and it is estimated that £10,000 additional will be required to complete the works. Provision is made for the filtration of the water, which is reported by the Analyst to be of first-class quality. The water is distributed to all parts of the district, nearly all the houses having domestic supplies. Another source of supply is Small's Well; the water from this source is piped to different parts of the district and distributed through stand-pipes. This water is pronounced to be of good quality, and is commonly used for drinking purposes.

Sewerage  
and  
drainage.

All the streets are sewered, with the exception of portion of Middleton Park. The houses in this locality are drained into cess-pits, which are faulty in construction, and admit of percolation into the surrounding sub-soil. These cesspits are only cleaned out at long intervals. All houses and premises with the exception of the very poorest are connected with the sewerage system. The houses in West View are drained into a defective sewer. With these exceptions the sewerage of the district is satisfactory. The sewers are constructed of earthenware pipes with the exception of the one in Westbourne, which is a huilt sewer, having a dished limestone bottom, with brick-built sides pointed in cement. The trapping and ventilation are fairly satisfactory. The contents of the sewers are discharged at various points along the beach, generally into deep water, but in some instances above low-water mark. A very obnoxious nuisance is caused at the eastern Camber at low water during the warm weather by the effluvium arising from the lodgment of sewage matter and refuse. None of the sewers discharge directly into the Camber, but the sewage seems to be carried back by the action of the tide.

Excre-  
ment and  
refuse  
disposal.

In more than half the houses in the district the excrement is disposed of on the water-carriage system. There are about 300 midden privies, some of which are very foul, and not cleaned out sufficiently often. About fifty houses have no back-yards, and are unprovided with sanitary conveniences, all refuse, &c., being deposited on the streets. The domestic scavenging of the district is undertaken by the Sanitary Authority and carried out under contract. Each house is visited once weekly by the scavengers, and the refuse removed to the manure dépôt at Ballyvorloun, which is just outside the district. The manure dépôt is on the side of the public road, but well isolated from houses. The manure is sold monthly, so that large quantities are not permitted to accumulate.

Slaughter-  
houses.  
Common  
lodging-  
houses.

There are no slaughter-houses within the district, all slaughtering being done outside the bounds of the Queenstown urban district.

There are about fifty common lodging-houses in the district, only twenty of which are registered. The registered lodging-houses are suitable and well kept, and are regularly inspected by the Inspector of Common Lodging-houses. Overcrowding occasionally occurs during the height of the emigrant season. The bye-laws relating to common lodging-houses are not enforced as regards registration.

Dairies,  
cowsheds,  
and  
milkshops.

There are no dairies or cow-sheds in the district. The milk supply is obtained from outside sources.

There are twelve milk-shops, in one of which milk is exclusively sold. The others are in general-dealers' shops, some of which are not as clean as is desirable. As a rule, the milk is distributed direct from the dairies, and very little is retailed in shops.

Regulations under the Dairies, Cow-sheds, and Milk-shops Order are not in force in the district.

There are about eight and a half miles of roads in the district. Roads, streets, laneways, &c. They are in a very bad state of repair, badly scavenged, and have been neglected for some years. A considerable sum of money has recently been expended in flagging the footpaths, which are in a satisfactory state.

The Urban District Council meet regularly weekly. The necessary Sanitary Administration. orders are made on the reports of the Medical Officers of Health and Sanitary Sub-Officer, and enforced when requisite. During the past year the Medical Officers of Health furnished fifty-three reports to the Sanitary Authority, and the same number of reports was furnished by the Sanitary Sub-Officer to the Medical Officers of Health. The latter Officer submits reports at each meeting of the Sanitary Authority, and makes, on an average, about 150 inspections weekly. During the past twelve months thirty-six notices were served for the abatement of nuisances; the greater number of the tenement houses were limewashed and cleansed, and disinfection carried out where requisite.

The Queenstown General Hospital, which is supported chiefly by Hospital for infectious diseases, &c. voluntary contributions, is available for the reception of patients suffering from diseases of an infectious nature. The disinfecting apparatus in use is not an efficient one. There is an ambulance for the conveyance of patients to hospital. In addition to the General Hospital there is an Intercepting Hospital, situate close to the town, for the reception of sea-borne patients suffering from diseases of an infectious nature. The Infectious Disease (Notification) Act, 1889, and Infectious Disease (Prevention) Act, 1890, are in force in the district.

No bye-laws under the Public Health Acts have been adopted by the Sanitary Authority with the exception of those relating to common lodging-houses.

The matters at present demanding most attention on the part of Recommendations. the Sanitary Authority are as follows:—

- (1.) The housing of the working classes and the prevention of overcrowding in tenement dwellings.
- (2.) The abolition of midden privies and the substitution of water-closets or the pail system of excrement disposal.
- (3.) The remedying of defects in the sewerage system of the district, particularly as regards the outfall.
- (4.) The condition of the roads, streets, &c.
- (5.) More frequent cleansing of ashpits, &c.
- (6.) The registration of all common lodging-houses and enforcement of bye-laws relating thereto.
- (7.) The adoption of a code of bye-laws under the Public Health Acts.
- (8.) The adoption of regulations under the Dairies, Cow-sheds, and Milk-shops Order.
- (9.) The provision of an efficient disinfecting apparatus.

THOMAS J. BROWNE,  
Medical Inspector.

May, 1901.

P\*2

## RATHMINES AND RATHGAR.

### REPORT ON THE SANITARY CIRCUMSTANCES AND ADMINISTRATION OF THE RATHMINES AND RATHGAR URBAN DISTRICT.

BY DR. T. J. BROWNE.

**General Description.**

The urban district of Rathmines covers an area of 1,714 acres, and is situated on the south side of the city of Dublin, from which it is separated by the Grand Canal. The entire district is comprised in the South Dublin Union. It is chiefly a residential district, the houses being for the most part of the better class. The working-class population is comparatively small. The population is an increasing one, being, according to the Census of 1891, 27,796, and now estimated at 32,000. The number of inhabited houses is approximately 5,500, the density of the population being 5.45 to each house, and 18.0 to each acre. The rateable value is £150,300. The elevation of the district above sea-level ranges from 50 to 150 feet. The soil is entirely yellow clay, overlying shale rock to an average depth of eight feet.

**Dwellings.**

The majority of the houses are occupied by persons of the better class, and are generally of modern construction, provided with domestic water supplies and good drainage, which, in many instances, has been tested by the Sanitary Staff.

The tenemental dwellings in the district number about 120; many of these are overcrowded and deficient in lighting and ventilation.

There are 785 houses in the district valued under £6. These are occupied by the working classes, and are, for the most part, situated in narrow lanes and courtyards. They are generally one-storey houses, having one or two rooms in each, and are faulty as regards air space, lighting, and ventilation. Many are overcrowded and kept in a filthy state; in fact, domestic uncleanness and untidiness are commonly to be observed. The yards in many instances are unpaved and defectively drained. A large proportion have no back yards, and one closet or privy serves for five or six families. The localities where these houses are to be found are as follows:—Milltown, Westmoreland Park, Station-lane, Parkview-lane, Coffey's-arch, Church-place, Chelmsford-lane, Temple-place, Swan-place, Harold's-cross, Quarry-yard (Terenure), Orwell-court.

Within the past few years sixty-three houses have been built by the Sanitary Authority (under a special Act) for the working classes, and it is in contemplation to erect 369 dwellings under the provisions of the Housing of the Working Classes Acts. These, when completed, will provide for the necessity of the working classes as regards housing in the district.

The Artisans' Dwelling Company have erected 318 houses in the district, the Greenmount Spinning Company, 86, and the Harold's-cross Laundry Company, 18; all of these houses are of a suitable class, and the sanitation satisfactory.

The water supply of Rathmines urban district is obtained by Water gravitation from the valley of Glen-na-amol, which is situate in the supply. Dublin Mountains, about eight miles distant from the township. The catchment area consists of 7,000 acres, small patches of which are cultivated, and remainder being pasture lands and mountain. The soil is mostly alluvial and sandy, overlying rock. There are about sixty inhabited dwellings in the gathering area, the drainage from all of which is diverted and passes into the river below the reservoirs. The water is chiefly derived from springs, and is conveyed direct into the reservoir, being protected in its course as far as possible from contamination. There are two catchment reservoirs, the upper of which is the township supply, and the lower serves the mill-owner having the water rights. The upper reservoir is 578 feet above sea level, and covers fifty-seven acres. It is fifty-five feet deep, and has a capacity of 3,570,000 gallons, holding a supply for 244 days. The filter-beds and service reservoir are situate at Ballyboden, about four miles distant from the township, and are 327 feet above sea level. The reservoir is two acres in extent, and has a capacity of 120,000 gallons. There are four filtering beds, having an area of 6,000 square yards filtering surface. The filtering medium consists of one foot fine sand, one foot coarse sand, and one foot of gravel and stone. The water is conveyed from the catchment reservoir to the service reservoir in a 15-inch pipe, and from the service reservoir to the township in 18 and 12-inch pipes. It is distributed through stand-pipes and fountains in the poorer localities. All the better-class houses have separate branch pipes from the mains.

There are about forty miles of roads, streets, and lanes in the township, all of which are sewered. The system of sewerage is entirely gravitation, and consists of two main sewers with branches. One of the main sewers serves the northern portion of the district, and the other the southern portion. The northern main sewer is, in part of its course, a brick culvert with arched roof; the remainder is constructed of brick (egg-shaped), and of earthenware pipes. The southern main sewer is, in part of its course, constructed of brick (egg-shaped), and the remainder of earthenware pipes. The outfall is into the River Liffey between Poolbeg Lighthouse and the Pigeon House Fort. The sewage is discharged into the river only on ebb tides. The outfall sewer is under the control of a Joint Drainage Board, composed of certain members of the Rathmines and Pembroke Urban Councils. The main sewers and branches are ventilated by surface grids on the streets and roadways. The branch sewers are all piped, with the exception of about five miles of box sewers. These are flagged top and bottom with masonry sides. All the house connections are constructed of earthenware pipes properly trapped and ventilated, and in many instances laid on concrete. In the poorer localities there are no house connections, the house slops being disposed of into the nearest gully-traps. A stream flowing through portion of the South Dublin rural district enters the Rathmines urban district at Tivoli-avenue. This stream conveys portion of the sewage of the rural district, and is uncovered up to the point of junction with the Rathmines district. From this point it is covered over. During periods of drought and warm weather a very offensive

odour is given off from the stream. The stream should be covered where it passes the vicinity of dwellings. The sewerage system on the whole seems satisfactory.

**Refuse disposal.** The domestic scavenging is undertaken by the Sanitary Authority. Twenty men with a similar number of horses and carts are employed at this work. About half the number of houses in the district are provided with movable receptacles for refuse. These are, in many instances, broken and unsuitable for the purpose. The contents are removed daily by the scavenging staff. Houses having ashpits are only visited once in three months by the scavengers. These ashpits are often the receptacles for house slops and refuse of all kinds, and receive the contents of adjoining privies. They commonly serve for several houses, and are very faulty in construction, close to the dwellings, and constitute a source of serious danger to the public health.

**Excrement disposal.** Is, for the most part, effected by water-closets. In the poorer parts of the district the closets, where they exist, are fitted with old-fashioned iron troughs instead of pans. These are very unsatisfactory and difficult to keep clean. There are a great many cesspit privies, which are used in common by several families, and are usually kept in a most filthy state. Many of these privies are situate close to dwellings. All of these privies should be abolished and dry-earth closets or water-closets substituted. Owing to the difficulty of keeping closets common to several houses in a cleanly state, it would be desirable that each house should have separate closet accommodation.

**Manure depôts.** There are two manure depôts for the district, one at Milltown and the other at Kimmage. The Milltown depôt is an old quarry containing a large volume of water on the banks of the River Dodder, and close to several occupied dwellings. The odour from the depôt is most offensive. The manure depôt at Kimmage adjoins the public road, and is also close to occupied houses. Having regard to the objectionable sites of these depôts, and the expense entailed in carting stuff to them, I consider that a refuse destructor should be procured.

**Dairies, cowsheds, and milkshops.** There are twenty-nine registered cowsheds and dairies, and twenty-one milkshops in the Rathmines urban district. Generally speaking, the dairies are not much used for the purpose of storing milk, the milk being sent direct to the customers. They are, for the most part, suitable structures and kept clean.

The cowsheds are in many instances situate in confined yards close to dwellings, their construction and drainage being defective, and cleanliness not sufficiently observed. In a few instances piggeries are close to the sheds and manure heaps in their vicinity. The regulations are not enforced. The milkshops are generally situate in the dwelling-houses, but in separate apartments. In some only milk, eggs, and butter are sold, but others are general provision shops. The milkshops are, as a rule, kept in a cleanly state, fairly well ventilated and airy. The greater portion of the milk supply of the district comes from outside sources.

**Common lodging-houses, Bake-houses, Slaughter-houses.** There are no common lodging-houses in the district, and no bye-laws relating thereto are in force.

There is only one bakehouse in the district, which is a suitable structure, and kept in a cleanly state.

There are four slaughter-houses in the Rathmines urban district, none of which comply with the bye-laws. They are all too close to dwelling-houses. Some are defective in construction, and manure is permitted to accumulate in their vicinity.



The average death-rate in the Rathmines urban district for the past five years was 20·1 per 1,000 of the population, based on the Census of 1891. The zymotic death-rate during the same period was 1·7 per 1,000 of the population. Scarlatina, measles and whooping-cough were prevalent during this period. There were also a considerable number of cases of enteric fever notified. The notifications under the Infectious Disease (Notification) Act during the past year were as follows:—Diarrhoea, 51; diphtheria, 20; dysentery, 10; continued fever (simple), 10; erysipelas, 17; puerperal fever, 1; scarlatina, 66; enteric fever, 77. Death rate, &c.

The enteric fever cases were attributed, in some instances, to defective house sanitation, and in others to the use of oysters supposed to be specifically contaminated. The sources of infection in the diphtheria cases could not be satisfactorily traced in the majority of instances, but some were imported into the district. The necessary preventive measures were in all cases adopted.

The Rathmines Urban District Council consists of twenty-one members. The Public Health Committee meets regularly fortnightly. The necessary attention is paid to the reports of the Medical Officers of Health and Sanitary Sub-Officers, and the requisite orders made. Sanitary Administration.

F. P. Fawcett, Esq., Executive Sanitary Officer.

Sanitary Staff.

R. Brown, Esq., M.D., Medical Superintendent Officer of Health.

R. T. Hearn, Esq., M.D., Medical Officer of Health.

F. P. Dixon, Esq., C.E., Borough Surveyor.

Sanitary Sub-Officers:—

Mr. Thomas Balmer.

Mr. Martin Walsh.

M. Frederick Jackson.

The two first-named Sanitary Sub-Officers, Messrs. Balmer and Walsh, have been several years in office. Mr. Jackson has only recently been appointed, and possesses a certificate of competency as a Sanitary Officer from the Sanitary Institute of Great Britain. The Sanitary Sub-Officers devote their whole time to the discharge of the duties of the office. They keep diaries showing the work which they perform, and report matters affecting injuriously the public health to the Sanitary Authority, but seldom furnish reports to the Medical Officers of Health. They also act as dairy inspectors and superintend the disinfection of infected houses. They are efficient officers, and discharge their duties in a satisfactory manner.

There is no hospital for infectious diseases within the district. Cases of infectious disease occurring in the district are sent to the Meath Hospital and Cork-street Fever Hospital, both of which institutions are within two miles of the bounds of the district. The Sanitary Authority possesses a good ambulance for the conveyance of infectious cases to hospital, and a Washington Lyons disinfecting apparatus. Hospital accommodation and disinfection.

Bye-laws  
and regu-  
lations in  
force in  
district.

The Infectious Disease (Notification) Act, and the Infectious Disease (Prevention) Act have been adopted, and are in force in the district. The following list shows the matters concerning which bye-laws have been made:—

- (1.) The cleansing of footways and pavements adjoining any premises.
- (2.) The removal of house refuse.
- (3.) The cleansing of privies, ashpits, and cesspools.
- (4.) For the prevention of nuisances arising from filth, dust, ashes, and rubbish, and for the prevention of keeping animals on any premises so as to be injurious to health.
- (5.) New buildings.
- (6.) New streets.
- (7.) With respect to the closing of buildings unfit for human habitation.
- (8.) Slaughter-houses.

Regulations respecting dairies, cow-sheds, and milk-shops are in force in the district.

Public  
lighting.  
Roadways  
and  
passages.

The district is lighted by electricity.

Most of the streets in the district are paved with granite setts, while the footpaths are flagged with ferrumite in the populated portion of the district. Macadam is used on some of the roads.

In some of the laneways and passages the roadway is unpaved, the surface uneven and the channelling defective. The surface in these places is not infrequently littered with ashes, vegetable refuse and other objectionable matter.

Scavenging Staff consists of fifty-one men with twenty-four horses and carts. There are also ten watering carts.

Summary of sanitary work attended to during the year 1899:—

Number of orders or notices to abate nuisances or perform other sanitary work, . . . . .	459
Number of prosecutions for neglect of notices, . . . . .	27
Number of convictions, . . . . .	27
Number of samples of food taken, . . . . .	193
Number of prosecutions in respect of same, . . . . .	9
Number of convictions, . . . . .	9
Number of houses, yards, and premises inspected, . . . . .	13,607
Number of houses limewashed . . . . .	727
Number of dwellings disinfected, . . . . .	77
Articles of clothing disinfected, . . . . .	557
Patients removed to hospital, . . . . .	66

Recom-  
menda-  
tions.

The matters calling for attention from the Sanitary Authority may be summarised as follows:—

Privy middens and foul ashpits close to dwellings and containing the accumulated excreta and refuse of months, much of the liquid part of which soaks into and fouls the neighbouring soil. These should be abolished, and water-closets or the pail system substituted, and ashbins provided instead of ashpits.

The paving and drainage of lanes, courts, and back yards in the poorer quarters of the district so as to secure the cleanliness of the immediate surroundings of dwellings should be attended to.

The closing of insanitary houses, and the provision of healthy dwellings for the working classes.

Periodical cleansing and linewashing of houses in courts and lane-ways.

The enforcement of the bye-laws made under the Public Health Acts, and of the dairy, cow-shed, and milk-shop regulations.

The abolition of the existing manure depôts, and the provision of a refuse destructor.

I desire in conclusion to express my thanks to the various officers of the Rathmines District Council for information and assistance afforded me during the course of my inspection.

THOMAS J. BROWNE,

Medical Inspector.

December, 1900.

## SKIBBEREEN.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE SKIBBEREEN URBAN  
DISTRICT.

BY DR. T. J. BROWNE.

General  
Description.

The town of Skibbereen has, within the past year, been constituted an urban district.

The district covers an area of 1,006 acres, and is situate in the townlands of Carrigfodda, Coomea, Gootnaclohy, and Marsh. About one-third of the area is built on, the remainder being pasture land, or utilised for agricultural purposes. The town proper is situate on the southern bank of the River Ilan, which is tidal for a distance of about a mile above the town. The river is navigable for vessels of from two to three hundred tons up to Old Court, which is about two miles below the town. Coals, salt, brick, and manures constitute the principal imports, and are conveyed by lighter from Old Court to Skibbereen.

Portion of the town is low-lying, being below high-water mark, and is subject to flooding at spring tides. When these occur during periods of heavy rainfalls, great inconvenience and suffering result, particularly to the poorer classes who chiefly inhabit this area.

The population of the district, according to the Census of 1891, was 3,269, and is a decreasing one. The professional, mercantile, and trading classes form the bulk of the population; the artisans and labouring classes are less numerous. Weekly markets are held, also monthly fairs for the sale of horses, cattle, sheep, pigs, &c. There is a meat and fish market, the property of the Urban Council.

## Dwellings.

The valuation of the district is £5,516, £4,448 of which is on buildings, the remainder on lands.

Eleven houses have been provided under the Housing of the Working Classes Acts, and are let at a weekly rent of 2s. 5d. The labouring classes are, for the most part, very badly housed. Many dwellings are one-roomed, with earthen floors and very damp, having no yards, and badly constructed and deficient in ventilation and lighting. Back yards, where they do exist, are usually unpaved and undrained, or drained by surface channels from yard to yard, and kept in a very filthy state from accumulations of manure and other refuse. Piggeries are commonly to be found in such yards, and, from their proximity to the houses, and the condition in which they are kept, constitute a serious danger to the public health. There is a general absence of sanitary conveniences in connection with the houses in the town. In most cases the manure, ashes, &c., collected in yards has to be removed through the dwelling-houses, there being no back-

entrance to the yards. In some instances the yards connected with the better-class houses are in a very unsatisfactory state as regards cleanliness, due to the keeping of cattle and pigs, defective drainage, &c. On the whole, the sanitation of the dwellings, particularly those occupied by the poorer class, is most unsatisfactory.

The town of Skibbereen is supplied with water on the gravitation system. The supply is taken from the River Savenore at a point about six miles distant from the town, conveyed thence into a good-sized reservoir, and, after passing through the filter-beds, the water is piped to the town. The filter-beds have not been renewed for a lengthened period, and are not working satisfactorily. The pressure of water in the mains has recently been greatly reduced, and has failed to reach portions of the district situate on the higher level. This is probably due partly to the dam on the river at the intake having been partially swept away by floods, and partly to the great waste of water from defective fittings and carelessness on the part of consumers in allowing water taps to run continuously. The water supply should be abundant for all purposes if only properly looked after. The River Savenore rises from a lake about three miles above the intake of the Skibbereen water supply, and flows through an agricultural district. The sources of pollution appear to be few, and having regard to the great volume of water in the river, would not be likely to have any effect on the quality, particularly if properly filtered. The Analyst's report on the water when last submitted for analysis (about two years ago) was satisfactory.

There are four public pumps and a fountain in the town, the water from which is still used to a great extent. These waters have not been analysed within recent years, but are supposed to be of good quality.

Nearly all the streets in the town are sewered, but the sewers are rubble-built ones and, in some instances, the construction, trapping, and ventilation are defective. Chapel-lane and portion of Market-street are unserved. Many of the yards are not connected with the sewerage system, the sewage from them flowing into the water channels on the public streets. The drainage of the majority of the poorer class of houses is very defective. They are usually drained by surface channels from yard to yard, and the channels are not kept free. In some instances there is no provision for drainage, or the yards are drained under the floors of the houses into the water-channel of the street, the drains under the houses being constructed of rubble masonry, and permitting of soakage into the foundations and sub-soil. There is no map of the system of sewers.

The better-class houses are, for the most part, provided with water-closets, the excrement being disposed of on the water-carriage system. Some houses have midden privies, which are emptied at irregular intervals. In a few houses the pail system is adopted. The poorer class of houses have no sanitary conveniences, the excrement being deposited on the heap of manure and ashes generally to be found in the yards, and which are only removed once or twice in the year, when they are sold to the farmers or used for manuring gardens. The Sanitary Authority do not undertake the domestic scavenging. This is done by the occupiers of houses, and is carried out only at very infrequent intervals, and in an unsatisfactory manner. The scavenging of the roads, streets, and passages, particularly the latter, is unsatisfactory. There are two public conveniences in the town, neither of which is kept in a cleanly state.

Water supply.

Sewerage and drainage.

Excrement and refuse disposal.

**Keeping of animals.** There are about fifty piggeries in the town, almost all of which are unsuitable being in close, confined yards, near to dwellings, badly drained, and usually kept in a filthy state.

**Dairies, cowsheds, and milkshops.** There are no dairies or milk-shops, properly speaking, in the town. The milking utensils are usually kept in the dwelling-houses, and the milk sent direct to the customers. There are about fifteen cowsheds in the town. With the exception of one or two, they are too close to dwellings, structurally defective, dirty, badly drained, and generally unsuitable. There is no Inspector of Dairies, &c., and no regulations in force in district. There are two creameries in the district—one recently established in a populous part of the town, and the other on the outskirts.

**Common lodging-houses.** There are about five common lodging-houses in the district, none of which are registered or suitable for the purpose.

**Slaughter-houses.** There are ten slaughter-houses in the district, six of which are in dwelling-houses. They are all structurally defective and badly drained, and some are kept in a filthy state, manure and offal being allowed to accumulate in their vicinity.

**Sanitary Administration.** Up to the 1st October, 1900, the district formed portion of the Skibbereen rural district. Since that date the district has been under the control of the Skibbereen Urban Council, but up to the present no sanitary business has been transacted. During the past year the Medical Officer of Health furnished twenty-nine reports to the Rural District Council; the necessary orders were made on these reports, and five prosecutions for failure to comply with notices were instituted. The Sanitary Sub-Officer made twenty-nine reports to the Medical Officer of Health, and inspected about 150 premises. Having regard to the condition of the district, more careful and systematic inspections are requisite. There are no bye-laws under the Public Health Acts in force in the district.

The Infectious Disease (Notification) Act, 1889, was in force in the district up to the 1st October last, when the district was taken over by the Urban Council, but that body have not apparently since taken any practical steps towards putting the Act into operation.

**Hospital for infectious diseases.** There is accommodation for forty-nine patients in the Workhouse Fever Hospital, which is situate on the confines of the district. There is an ambulance at the hospital for the conveyance of patients suffering from diseases of an infectious nature to hospital, but no disinfecting apparatus.

**Recommendations.** From what has been stated it is evident that the Skibbereen urban district is in a very unsatisfactory sanitary condition.

The matters which most urgently demand attention from the Sanitary Authority are as follows:—

- (1.) Providing an increased water supply and more efficient filtration.
- (2.) Remedying of defects in the sewerage system, and enforcing drainage of all yards and premises.
- (3.) Providing for the better housing of the working classes.

- (4.) The abatement of nuisances caused by the keeping of animals on premises; manure, ashes, &c., in yards, and defective domestic scavenging.
- (5.) The registration of common lodging-houses; only suitable houses should be registered.
- (6.) The registration of dairies, cow-sheds, and milk-shops.
- (7.) The adoption of a code of bye-laws under the Public Health Acts relating to the following matters:—
  - (a.) Cleansing of footways and pavements.
  - (b.) The removal of house refuse.
  - (c.) The cleansing of privies, ashpits, and cesspools.
  - (d.) For the prevention of nuisances arising from filth, dust, ashes, and rubbish, and for the prevention of keeping animals on any premises so as to be injurious to health.
  - (e.) With respect to the closing of buildings unfit for human habitation.
  - (f.) With respect to slaughter-houses.
  - (g.) With respect to common lodging-houses.
- (8.) Regulations with regard to dairies, cow-sheds, and milk-shops should be adopted, and systematic inspection made of all such places.
- (9.) Systematic and careful inspection of the district should be made by the Sanitary Sub-Officer.

THOMAS J. BROWNE,  
Medical Inspector.

January, 1901.

## SLIGO.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE SLIGO URBAN DISTRICT.

By DR. E. COXY BIGGER.

General  
Description.

The urban district of Sligo, which is included in Sligo Union, covers the area of 3,000 acres, and is situated near the mouth of the Garavogue River, at the head of Sligo Bay. Sligo is a maritime town, there being a considerable amount of shipping, some of which is with foreign ports, but chiefly with England and Scotland; there is also a fairly large coasting trade. Sligo is one of the best market towns in the west of Ireland, the population being chiefly engaged in trade. There is a considerable amount of employment for labourers, carters, &c., at the harbour, railway, &c., but there is very little manufacture.

The population, according to the Census of 1891, was 10,274,\* and there has not been much change since. The number of inhabited houses is approximately 1,936, the density of the population being 3·42 to each acre.

The rateable value is £21,915, including land, and the total rates are 8s. 10d. in the pound, including poor rate, water rate, borough rate, &c.

The elevation of the district above sea level ranges from a few feet above ordinary data to over 100 feet.

The soil is principally clay over limestone.

The condition of the public health in Sligo may be gathered from the following tables, in which are shown the birth rates, death rates from all causes, and the zymotic death rates during the five years 1896-1900, based upon the population according to the Census of 1891, which is thought to be about the same as at the present time.

—			Birth Rates.	Deaths from all Causes.	Deaths from principal Zymotic Diseases.
1896.	...	...	252	218	13
1897.	...	...	261	262	13
1898.	...	...	239	203	23
1899.	...	...	261	191	15
1900.	...	...	259	178	10

The birth rates are below the average birth rates for the 100 large towns of England and Wales, and a low birth rate has always a favourable influence upon the death rate and zymotic death rate. The death rate might, I think, be still further reduced if proper attention was paid to all sanitary matters, including the proper housing of the working classes.

\* Population according to the Census Returns of 1891 is 10,523.



The zymotic death rate is very low; this is partly conducted to by the low birth rate, also the freedom the town enjoys from typhoid fever. This freedom from typhoid is, in my opinion, largely due to the pure water supply.

For the purposes of comparison the following tables are given for England and Wales:—

	33 GREAT TOWNS.		67 OTHER LARGE TOWNS.	
	Total Death Rate.	Zymotic Death Rate.	Total Death Rate.	Zymotic Death Rate.
1891. ... ..	15.9	2.55	17.2	2.58
1897. " " "	16.1	2.57	17.2	2.61
1898. " " "	16.0	2.55	17.2	2.61
1899. " " "	16.2	2.61	18.0	2.65
1900. " " "	16.4	2.60	18.1	2.66

The majority of the houses are occupied by persons of the working class, and are usually one-storey, built with stone, a few having only one room, and many have only two rooms or three rooms; they are practically all self-contained, there being only one tenement house. The houses are generally old, few having modern improvements. Many are out of repair, a large number are damp, and deficient in light and ventilation. A few are situated in narrow lanes or back passages. They are very often kept in a dirty state, and this is conducted to by the surroundings being very dirty. Dwellings.

The yards of the smaller houses (where these are provided) are mostly unpaved or partly paved, and undrained or defectively drained, frequently without sanitary conveniences of any kind. Many have no back yards, but a common open space behind the houses, with a common privy for the use of several houses; on these open spaces there was mostly an accumulation of all kinds of filth. The drainage of the houses and yards have in many instances been improved, but many still require attention.

All the better houses have a direct supply of water; the smaller houses have not. These are supplied by street fountains in their immediate neighbourhood.

There are 1,048 houses in the district, valued under £4, and 223 houses over £4 and under £6; thus, about two-thirds of all the houses in Sligo are under £6 valuation.

The following houses and premises which I inspected are some of the worst and most insanitary. The houses not being numbered, the only means of identifying them is by naming the occupiers:— Insanitary Premises.

#### HOLBORN HILL.

Occupiers:

Bernard Kelly.—Thatched; earthen floor; no privy; yard not walled in nor paved; no proper drain nor traps.

Michael M'Niff.—In the same condition.

James Corcoran.—In the same condition.

Mrs. Kelly.—In the same condition, with the exception of a wooden privy.

Michael Connor.—In the same condition.

James Callen.—This is a shop; thatched; earthen floor; no privy; yard not walled in nor paved; no proper drain. There is a wall in the yard. The surface of the yard was filthy; two pigs and one donkey were kept in the yard.

Bridget Ward.—Thatched; but the rain comes through; earthen floor; no privy; yard not walled in nor paved; no proper drain nor traps; common yard; kept in a filthy condition.

Next house empty.

James M'Loughlin.

Edward M'Cullough.

John Doyle.

Michael Ward.

Martin Burns.

Thomas Hoana.

Mary Montgomery.

Michael Price.—This is also in the same condition, but has no back door.

Phelix Roney.—Thatched; earthen floor; no privy; small, dirty yard.

Michael Callaghan and Frank Foley.—Roof sheeted with wood; felted and tarred; earthen floor; no privy; no yard nor back doors; damp and dilapidated.

Thomas Farrell and James Callaghan.—Roof sheeted; felted and tarred; earthen floors; no privies; damp; open drain in yards.

Ellen Gunning and James Hart.—Thatched; earthen floors; no privies; yard not paved nor properly drained.

#### KING-STREET.

Mrs. Kelly.—Thatched; earthen floor; two privies for the use of this and the five following houses; no yard; open drain at back of row; the thatch of this and the other four houses in this row is bad, letting in the rain.

Michael Reynolds.—Is in the same condition, except the roof is slated.

John Burrows.—Is in the same condition as Mrs. Kelly.

Michael Carroll. do.

Dominick Leyden. do.

Miles Somers. do.

Michael Swift.—Slated; earthen floors; no privy; no walled-in yard; a large accumulation of manure behind this house; rain comes in through the roof. This house is dilapidated and not fit for human occupation.

Mrs. Sayers.—Slated, but allows the rain to come through earthen floor; no privy; no yard, but open space behind the house; no drains.

Patrick Begley.—In the same condition as Mrs. Sayers.

John Carroll. do.

## DUCK-STREET.

James M'Garry.—Thatched roof; earthen floors; no privy; no proper yard; no proper drain; not paved.

James Finn, John M'Clone, and James M'Loughlin.—Roof sheeted; earthen floors; no privies; not properly drained nor paved. These houses are very dilapidated.

Mark Fenny, Mrs. M'Donagh, and John Mearn.—Thatched; earthen floors; no privy; small yards; walls not properly built; no proper drainage; drain runs under the houses. These houses are dilapidated.

Pat. Flinn.—Roof sheeted; earthen floor; no privy; small yard; not properly drained.

Mrs. M'Norrow. do.

Nearly all the houses in Duck-street have wells in the yards; these wells are liable to pollution and are not protected.

John Whitaker.—Thatched; earthen floors; no privy; no back door; damp; dilapidated.

Mrs. Chrystal. do.

These two houses are quite unfit for human occupation.

## BARRACK-STREET.

## Occupiers:—

Robert Stephens.—Thatched; earthen floor; no privy; yard not paved; damp; no proper drainage.

Hugh Hart. do.

Peter Murray. do.

Bridget Devine. do.

Mary M'Goldrick.—Thatched; very bad; earthen floor; no privy; no proper drainage.

Robert Brierty. do.

Bridget Hart. do.

Mrs. Scanlan. do.

Miss Whiteside.—Slated; earthen floors; no privy; no proper drainage.

Celia Hart.—Thatched; earthen floors; no privy; no proper drainage.

Miss Keaveny. do.

Mrs. Clancey. do.

## MURPHY'S-LANE.

There are three houses in this lane without privies; earthen floors; deficient in light and ventilation; one of these occupied by Michael Conway, which is unfit for human habitation; another house is used as a store; the other as a stable.

## PORTER'S-LANE.

The surface of this lane was in a filthy condition. There were two houses in it, which did not appear to be occupied. Dr. Laird had already condemned them as unfit for habitation.

## BARRACK-STREET.

## Occupiers:

Francis Gordon and James Scott.—Very small yards; not properly paved nor drained; earthen floors; no privies.

Francis Gordon, Junr.—A donkey kept in this yard, which is not suitable for keeping such.

John Duggan, Pat. M'Bride, and Pat. Devine.—Earthen floors; houses not properly lighted; no privies. M'Bride was keeping two pigs in a yard not suitable for such. The houses occupied by Duggan and M'Bride are not fit for habitation.

Charles Ewing.—No privy to this house.

## COCHRANE'S-MALL.

## Riverside:

Slaughter-house, the yard of which is very unevenly paved with a large manure heap in it; the place is dilapidated, badly drained, and lies below the level of the cemetery, which is adjoining. A number of cattle and horses are kept on the same premises. These premises are not suitable for a slaughter-house.

Cochrane's-mall.—There are six houses in this row, all in the following condition: yard not properly paved nor drained; ashpits not covered nor concreted; very defective privies.

M'Fadden's.—Large unpaved, undrained yard; no privy; spouting defective.

Collins.—The yard adjoins M'Fadden's; there is a large accumulation of manure in this yard which, I was informed, was not cleared away for more than six months.

James Loftus and M'Garry.—Yards unpaved; no spouting on these houses; walls damp; a large accumulation of filth in ashpit, which was uncovered; no privies.

## Riverside:

A large number of one-storey thatched houses; very old; no privies. The back of this row is very filthy. Some of the houses have pig styes, which are constructed up against the walls of the houses. None of these houses have walled-in yards.

## LOWER ABBEY-STREET.

A row of about ten one-storey thatched houses; very old; no defined yards, but an open space behind; no privies; accumulation of manure close to the back doors; no proper ashpits; no drainage.

Five slated houses, without spouting; no privies; pigs are kept within six or eight feet of the houses; no proper drainage.

## ARMSTRONG'S-ROW.

Seventeen two-storey houses, without privies; yards very filthy from accumulation of manure, &c. No paving, nor properly drained; no spouting; roofs defective; damp. In some of the yards pigs are kept.

## JOHNSTON'S-ROW.

This is off Armstrong's-row, and consists of four houses of one room each, with earthen floors, no back doors, nor yards; no privies. These houses are deficient in light and ventilation and are unfit for human habitation.

## SMITH'S-ROW.

This is off Armstrong's-row, and consists of four houses, with earthen floors, no privies, no spouting; very dark and damp; very little air space front or rear. These houses are not fit for human habitation.

## ARMSTRONG'S-ROW.

West Side.—Some of the houses have neither yard nor privy; earthen floors; damp; those having yards are kept in a filthy state. Some have a common privy for three houses.

## ABBAY-STREET.

Yards not paved nor drained; no privies; no spouting; damp; earthen floors; accumulations of filth in the yards; pigs kept close to the back doors.

Court off Abbey-street, in which there are six houses, with narrow passage in front, which is not paved, nor levelled, nor drained; no privies; one ashpit in front for the six houses.

## WATER-LANE.

There are four houses in this narrow lane, with a common yard, no privies, no spouting, damp, very old, and dilapidated; at the end of common yard there is an accumulation of manure and ashes.

## 12, RATCLIFFE-STREET.

Yard not paved, nor properly drained; ashpit very dilapidated; no privy; accumulation of filth, &c.

## 17, RATCLIFFE-STREET.

Yard very filthy; accumulation of ashes and vegetable matter; no privy nor ashpits.

## HARMONY-HILL.

There are five old houses; spouting defective; damp; no back yards; no privies; no ashpits.

## WALKER'S-ROW.

Mrs. Davis.—No spouting; no privy; yard filthy; drainage bad.

## JOHN-STREET.

Smith's-row, off John-street.—There is a slaughter-house at end of Smith's-row, the yard of which is not levelled nor properly drained; manure pit not properly constructed; several pigs were kept in it. It was stated that offal was boiled in the yard, which is very objectionable to those living near. This place is not suitable

for a slaughter-house. The surface of Smith's-row was in bad repair, with an accumulation of filth upon it, and not suitably drained. There are eleven houses in this row without separate yards and without privies; and no spouting.

#### OLD POUND-STREET.

Pat. Kerns.—House old and dilapidated; yard filthy from accumulation of rubbish; not properly paved nor drained. The yard was kept in such a state as to be a nuisance.

Curly and Flinn.—Common yard for these two houses, which was not properly paved nor drained. A cow was kept, and it is used as a slaughter-yard. The place is not suitable for such, there being no proper place for killing, nor dressing, nor cooling the meat; no proper drainage; not properly lighted; the yard was filthy.

#### MAIL COACH-ROAD.

At the corner of this road there are about ten houses, which were in a deplorable condition; no drainage; no privies; earthen floors. A large accumulation of filth in the yards; also stagnant water in some of them. In front of these houses the pavement was very uneven and kept dirty.

A large number of houses on this road are old, dilapidated, damp, without sanitary conveniences, and kept filthy.

#### OLD GALLOW'S-HILL, SOUTH.

There are about fifteen houses, which are very old, dilapidated, without sanitary conveniences; the surface of the street in front of these houses requires to be channelled. These houses are not fit for habitation.

#### ROPE-WALK.

No enclosed yards; no privies; no drainage; earthen floors; pigs are kept too close to the houses.

#### CRANMORE.

This is a row of about twenty-five houses; they are very old; earthen floors; no privies; no yards, but an open space behind the houses, which is not drained. There was an accumulation of filth at the back of the whole row.

#### RAMSEY-ROW.

A row of small houses without spouting.

#### MIDDLETON'S-ROW.

The yards were filthy; without proper privies and ashpits.

There were some old houses at the head of William-street, and at the upper end of Churchill. These, I was informed, were going to be pulled down.

The surfaces of the passages and narrow lanes were not kept clean; more attention on the part of the sanitary authority might be paid to these.

Highways,  
streets,  
and  
passages.

There are about twenty miles of roads and streets; most of these are macadamised; the footpaths are flagged, paved, or made with small stones or gravel. A number of the laneways and passages are unpaved, with uneven surfaces, and no attempt at channelling.

The water supply of Sligo is obtained by gravitation from the mountain at Kilsellagh, situated over four miles from Sligo. The catchment area consists of over 1,100 acres of mountain land, practically free from cultivation, with only one or two habitations upon it. There are also a large number of springs, the water from which flows into the storage reservoir. This storage reservoir is about 7 acres in size, and is 30 feet deep. It has a storage capacity of over 100,000,000 gallons, or over 200 days' supply. Its elevation is 460 feet above sea level. There is a 12-inch iron pipe from this reservoir to the service reservoir.

The service reservoir is about half an acre in size, and is a concreted basin; its elevation is about 164 feet above sea level, and the service pipe from it to the town is a 12-inch iron pipe.

The water undergoes prolonged storage; there are no filters, but the water passes through copper screens, which act as mechanical strainers.

The supply was cut off at night to prevent waste. The consumption, even with this precaution, was about 40 gals. per head per day; this is a large supply per head for a town having few baths and water-closets. In all probability there is considerable waste through faulty fittings or leaking pipes.

Having inspected the catchment area, storage, and service reservoirs, I am of opinion that the quality of the water is far above the average of town supplies.

The catchment area is almost an ideal one, on account of the nature of the mountain land, and its freedom from cultivation and habitations; besides a large quantity of the water is obtained from springs. These facts, taken together with the prolonged storage which the water undergoes, renders it a safe and good supply, even without filtration. Yet if this water was passed through properly-constructed and efficiently worked filters, it would give additional security against possible pollution.

The sanitary authority should immediately take steps to prevent waste, so that they could put the town on a constant supply, as an intermittent supply is inconvenient and may be dangerous.

The system of sewerage is by gravitation, and consists of main sewers, which are five and a half miles long; also 750 yards of intercepting sewers along south side of river. These sewers are mostly stone-built—V-shape. There are also branch sewers, which are 9-inch stoneware or earthenware pipes along the side streets, &c. The main sewers are ventilated with open-grate ventilators level with the street. The house connections are constructed of 6-inch earthenware pipes, which are trapped, and both those recently built, and the drains of the better-class houses have ventilating pipes, which run above the edge of the roof. The house connections are made by the landlord, under the supervision of the officials of the sanitary authority. Many of the smaller houses have no drains. Slops, &c., are thrown on to the ground, sometimes in front of the house, and at other times on to the surface of the yard.

There is no system of purification; the sewage discharges directly into the river at all times, there being no valves or flood gates.

The main sewerage system is, on the whole, fair, but the house drains and drains from the yards of the smaller houses are very far from being satisfactory.

Disposal  
and  
removal  
of excre-  
ment and  
house  
refuse.

The method of disposal of excrement and house refuse is mostly the privy-midden system; there are comparatively few water-closets. The privy middens, which adjoin the majority of the poorer houses, are faulty in construction. Some are made of wood. They are frequently kept in a filthy condition, and, in many instances, there is only one privy for several houses. The domestic scavenging is not done by the sanitary authority. Householders have to get the privy middens, ashpits, &c., cleaned out themselves; this is undoubtedly the reason why many of them are not cleaned out for many months, and as they are the receptacles for all kinds of filth, rubbish, &c., they are a serious danger to the public health. The middens or cesspits should be concreted at the bottom and sides, so as to prevent pollution of the sub-soil, and the privies should be repaired and new ones provided where required.

Manure  
depôt.

There is no manure depôt for the district. The manure is kept till the spring, and used in the small gardens at the back of the houses, or carted away by farmers.

Dairies,  
cowsheds,  
and  
milkshops.

The number of these could not be conveniently ascertained, as there was no registration of such, nor are there any regulations in force. There are very few large dairies or milkshops in the urban district. There are a number of small dairies; these are mostly without the proper arrangements for keeping milk in a separate apartment, nor have they suitable arrangements for washing the cans and other vessels. The cowsheds belonging to these dairies usually contain only one or two cows; they are rarely properly constructed, and they do not allow sufficient cubic air space for each cow. The drainage is, in many instances, defective. Cleanliness does not receive the necessary attention. The milk, however, is mostly delivered to the customers soon after the cows are milked.

There are no regulations in force for the keeping of animals.

Common lodging-houses are not registered, nor are there any regulations in force.

Slaughter-  
houses.

There is no public abattoir. Most of the butchers slaughter cattle in their own yards. Most of those inspected were totally unsuitable for the purpose, being small, roughly paved, defectively drained, and not having suitable arrangements for killing, dressing, nor cooling the meat.

The Infectious Disease (Notification) Act is not in force, so that the number of cases of infectious disease could not be ascertained.

Sanitary  
adminis-  
tration.

The Sligo Urban Sanitary Authority consists of the District Council, of which there are twenty-four members. They meet every alternate Wednesday. Attention is paid to the reports of the Medical Officers of Health and Sanitary Sub-Officer, but the orders made thereon, I have reason to believe, are not thoroughly carried out.

Dr. Laird—Consulting Sanitary Officer.

Dr. Laird and Dr. Martyn—Medical Officers of Health.

D. Magill, Esq.—Executive Sanitary Officer.

Thomas Hargaden—Sanitary Sub-Officer.

The scavenging staff consists of eleven men and three or four carts; also water cart.

Hospital  
accommo-  
dation.

Hospital accommodation for cases of infectious disease is provided by the County Fever Hospital, which is situated about a mile from the centre of the town; it is a large three-storey building, capable of accommodating about 30 patients.



There is no disinfecting apparatus. I am of opinion that Sligo, being a seaport town of considerable importance, it should be provided with a modern steam disinfecting apparatus.

The Sanitary Authority have an arrangement with the Gas Company for lighting the streets with gas. Public Lighting.\*

A detailed statement of the amount of sanitary work performed could not be obtained. The following are the records I was able to obtain:— Sanitary work performed in the year 1900.

The Medical Officers of Health made 60 reports during the year.

Water-closets erected,	a number.
Houses limewashed,	315
Sanitary prosecutions,	8 (all sustained).
Houses disinfected,	3
Houses closed,	none.

The Sanitary Authority might give the following their immediate attention:— Recommendations.

The necessity that exists for their undertaking the domestic scavenging of the town. This would be a most desirable step in the interests of public health, and would remove many nuisances that at present exist.

The adoption of the following Acts:—

The Infectious Disease (Notification) Act, 1889.

The Infectious Disease (Prevention) Act, 1890.

The Public Health Acts (Amendment) Act, 1890

To make bye-laws and regulations in relation to the following matters:—

- (1.) The removal of house refuse.
- (2.) The cleansing of privies, ashpits, and cesspools.
- (3.) For the prevention of nuisances arising from filth, dust, ashes, rubbish, and the keeping of animals.
- (4.) New streets and buildings.
- (5.) Dairies, cowsheds, milkshops.
- (6.) Common lodging-houses.

To erect a public abattoir and a modern steam disinfecting apparatus.

The owners of the insanitary houses mentioned in this report should be compelled to repair them, and provide the necessary sanitary conveniences, so as to make them sanitary where this is possible; where this is impossible they should be closed.

The dilapidated and defective midden privies should be repaired, and the floors and sides concreted, to prevent pollution of the sub-soil.

Lanes, passages, and small yards should be channelled, drained, paved, &c. Eave spouting should be erected where required.

I have to thank the various officers, particularly the Medical Officers of Health, Dr. Laird and Dr. Martyn, for their valuable assistance; also several of the other officers, for the information they gave me during my inspection.

E. COX BIGGER,  
Medical Inspector.

June, 1901.

## TANDERAGEE.

## REPORT ON THE SANITARY CIRCUMSTANCES AND ADMINISTRATION OF THE TANDERAGEE URBAN DISTRICT.

BY DR. C. J. CLIBBORN.

- General description.** Tanderagee, anciently, named Tawnaltna, is a market town, in the County of Armagh, twenty-four miles south-west from Belfast; is seated on the River Cusher, and consists of two principal and three smaller streets. The population in 1881 was 1,592; in 1891, 1,444; estimated population for this year, about 1,500. The area of the urban district is about 722 acres; there are, as nearly as possible, about 396 inhabited houses.
- Geological formation.** Sandy soil in the upper parts of the town, with sandy and clay soil in the lower, bedded on Silurian rock; the springs are very deep. The Urban Council is composed of ten members.
- Sanitary staff.** Executive Sanitary Officer, Mr. Sterling, who also holds position of Clerk of Council, and some private offices, viz.: Clerk in Solicitor's Office and in Rent Office.  
Sanitary Sub-Officer, who has lately been appointed to position of Town Surveyor, but whose appointment has not been sanctioned by the Local Government Board.  
Medical Officer of Health, Dr. Taylor.
- Sewerage.** The sewage of the west side of Tanderagee is disposed of by being carried, in an open drain at the foot of the gardens of the houses, to the stream which flows between Derrymore and Derryallen. Eight houses in the Square next the castle gate (Duke of Manchester's) are sewered into the castle glazed pipe sewer, which enters the same stream higher up its course. This stream flows through the mill race into the Cusher River, close to the town, and receives the sewage of the south-east side of Mill-street and Gifford-street through a glazed pipe sewer, about 106 yards long, of modern construction, and fitted with stench traps. The south-east side of the square is sewered with a built sewer running under the course of the street water table; it is also trapped and enters the main sewer at the south-east side of the town at the foot of the hill. This main sewer commences in Collins'-court, and passes behind the houses at various distances, and terminates by about 96 yards of newly-constructed glazed piping, emptying into a stream passing between Ballymore and Tullylough, which flows into the Cusher River, two or three miles from the town. There are no main sewers for Church or Montague-streets, but the sewage finds its way to the same stream by means of a field drain, to which there is a steep declivity.
- With the exception of about 198 yards of glazed piping, all the public main sewers are composed of either masonry or open drains. This is a most unsatisfactory arrangement, as mason-built sewers allow of soakage of deleterious matter into the surrounding soil, which, sooner or later, must become a probable source of infectious disease; the more dangerous in this town, as the present supply of water is derived from wells sunk in the town. The entire sewage of Tanderagee town is discharged into the rivers in a crude state.

thus causing a breach of the provisions of the Rivers Pollution Prevention Act, and creating another source of danger to the public health.

There are seventeen water-closets in the urban district, six of which are in the Castle (Duke of Manchester's) and two in the Rectory. The remainder of the town is provided with privies and ash-pits of a most rudimentary type, with very few exceptions; these are of faulty construction, more or less out of repair, the ash-pits in many cases being only holes in the ground, into which the contents of privies are discharged. In very few cases were the ash-pits covered. The yards of the town, as a rule, are either not paved or very badly so; in a number of cases the surface was uneven, and, in many cases, very badly kept. The ash-pits and privies are not cleaned out sufficiently often, and in a number of cases are situated too close to the dwelling-houses. Sanitary accommodation.

The Urban Council should cause properly-constructed privies and ash-pits to be provided. In no case should wooden privies be allowed; both privies and ash-pits should be of stone or brick, with cemented walls and floors to prevent soakage of deleterious matter into the surrounding soil. Ash-pits should, in all cases, be covered, and the Urban Council would do well to enforce the provisions of section 50 of the Public Health (Ireland) Act, 1878; they would also do well to adopt bye-laws compelling periodic cleansing of these privies and ash-pits.

The town of Tanderagee is dependent for its public supply on four pumps, which is hardly sufficient for a population of 1,500. Result of analysis, copies of which I attach to this report, is not satisfactory. Sufficient attention has not, I think, been paid to the sanitary surroundings of this well; so recently as 27th of February, 1901, the ground surrounding and above the well was covered with filth, and over the trap of the well human excrement was lying; the ground above and near this well is a cultivated and highly manured land. A little higher up the churchyard is situated. I do not see how some of the drainage from this churchyard can escape contaminating this source of water supply. Water supply.

The Urban Council should, I think, take into consideration the advisability of providing their district with an increased and pure supply of good potable water.

Diphtheria broke out in this town about 26th or 27th of July, 1900; the disease continued up to 20th of February, 1901; previous to this a case occurred in the rural district on the 1st day of June, but after careful inquiry no connection could be traced between this case and those that occurred in the urban district. Diphtheria.

Between the dates of 26th of July, 1900, and 20th of February, 1901, forty-six cases in twenty-five families came under the notice of the Medical Officer of Health, and there were four fatal cases. The first cases occurred in the families of Messrs. White and Bradley, and it is more than probable that the first case in each house occurred at the same time. In one case the water supply was obtained from the pump known as Portadown Pump, analysis of which shows it to be an impure and inferior water. The sanitary surroundings of this well at the time and at present are most unsatisfactory. (See previous remarks on water supply.)

At the date of my visit a privy of bad construction, and in an insanitary condition, was at some little distance from the dwelling-house; the ash-pit was simply a hole in the ground, causing contamination of the surrounding soil by soakage of deleterious matter.

The general sanitary condition of the surroundings of the houses of Messrs. White and Bradley was most unsatisfactory, and at the date of the outbreak of diphtheria, must have been much worse, as some attempt had evidently been made recently to have the yards and surroundings cleaned up. The milk supply in one of the cases (Bradley's) was obtained from outside the town. No objection of a serious nature could be raised to the cleanliness of the byres, but the ventilation might have been better. On inquiry I ascertained that when the milk was received into Bradley's house it was, as a rule, stored in the scullery, in close proximity to the scullery sink; this arrangement might lead to contamination of the milk. In Mrs. White's case the water supply was also obtained from the Portadown Pump. The privy in this case was of bad construction, and general condition of the sanitary surroundings was bad. The milk supply was obtained from a different source from the Bradley's. The cows in this dairy were kept in badly ventilated byres, which were not kept as clean as they should be. In the same yard pigs were kept and occasionally slaughtered. The sanitary condition of the privy and ashpit in this yard was very bad. The ashpit was simply a hole in the ground and full of filth.

None of these early cases were removed to the Fever Hospital. The Medical Officer paid great attention to all the cases, and had a very small percentage of deaths.

I inspected the rooms where these early cases were treated, and I do not think it was possible to have isolation strictly carried out. There was a complete absence of proper nursing, and the non-removal of these cases caused, I think, the disease to become epidemic.

Recom-  
menda-  
tions.

As the result of my inspection of the town of Tanderagee, I am strongly of opinion that the Urban Council should take into their serious consideration the advisability of providing an increased and improved water supply for the town, and adopt a more perfect system of sewerage. The existing built sewers, which allow of soakage into the surrounding soil, should be replaced with glazed pipes. The discharge of crude sewage into the rivers should be discontinued and some system of purification, either by septic tanks, or in whatever other manner a competent sanitary engineer may advise, adopted. The present privies of bad construction should be abolished. Privies of stone or brick, with covered ashpits and cemented walls and floors, should be provided. Bye-laws for the regulation of dairies, cowsheds, and milkshops should be adopted.

The Medical Officer might in future, when cases of so highly infectious a nature as diphtheria occur in his district, strictly enforce the provisions of section 141 of the Public Health Act, 1878, and advise the proper disinfection or destruction of bedding and clothing infected by the sputa of patients.

The Urban Council should, I think, pay more attention and act more promptly on the reports of their Medical Officer of Health.

The Sanitary Sub-Officer should, I think, be asked to make a detailed report dealing with the condition of the privies, ashpits, and yards in the town.

CUTHBERT J. CLIBBORN,

Medical Inspector.

March, 1901.

(Copy.)

## GOVERNMENT LABORATORY.

And Laboratory of the Public Analyst for Armagh and Carrick-  
fergus.

14, Alfred-street,  
*Belfast, 20th August, 1900*

Samuel Sterling, Esq.,  
Clerk of Council,  
Tanderagee.

DEAR SIR,—I received the sample of water forwarded by you and have carefully examined it. I find that it yields an abnormal amount of free and albuminoid ammonia, and has a slight excess of chlorides, as well as nitrates. It is, therefore, in my opinion, unsuitable for drinking.

Yours truly,

J. F. W. HODGES,  
County Analyst.

## TIPPERARY.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE TIPPERARY  
URBAN DISTRICT.

BY DR. T. J. BROWNE.

General  
description.

The urban district of Tipperary comprises an area of 837 acres, and is situate in the South Riding of the County of Tipperary, in the centre of a rich, dairy, farming, and agricultural district. The town is of considerable importance, having a population of 6,391 according to the Census of 1891, the number of occupied houses being about 1,200. There is a daily market for the sale of butter, a weekly provision market, and monthly fairs. The town was constituted an urban district from the 1st April, 1900, since which date the Urban District Council, consisting of eighteen members, have had charge of the sanitary administration of the district, prior to which date the Tipperary Board of Guardians, and later the Tipperary Rural District Council, were the responsible bodies.

The valuation of the district for rateable purposes is £9,603 19s., exclusive of Government property, which is valued at £1,591 10s. The liabilities amount to £13,450. The total rates levied for the year ending 31st March, 1901, amounted to 5s. 2d. in the pound.

The principal industries are a condensed milk factory, employing about 150 hands, and a mineral water factory, with an exclusive trade in butter, corn, and provisions. There are many fine shops in the town.

Dwelling  
accommodation.

There are five principal streets in the town, in which the better-class houses are situated. About three-fourths of these are provided with domestic water supplies and water-closets, the remaining fourth having privies or earth-closets, and being fairly well circumstanced as regards sanitation. All have back yards, and are provided with drainage, &c.

The middle-class houses are situate in six smaller streets. About one-half are provided with water-closets, the remainder with midden privies, which are, in many instances, badly constructed, and kept in a filthy state. In other respects these houses are, generally speaking, fairly good.

The poorer class of houses, which comprise nearly one-half of the total number of houses in the district, are situate in five by-streets and nine lanes. They are occupied by artisans, tradesmen, labourers, &c. About 100 of these houses are provided with privies and ashpits, but the remainder have no sanitary conveniences, while some are

dilapidated, insanitary, and unfit for habitation. The back yards, as a rule, are unpaved and undrained, with collections of ashes and filth strewn over their surface. There are about fifty piggeries in the yards connected with this class of houses, nearly all of which are defectively constructed, and give rise to nuisances. The worst localities are Bansha-road, Cork-street, Old-road, Cross-lane, Butter-lane, Hannon's-cottages, Limerick-road, Eaton's-cottages, which have no back yards, McCarthy's-court, portion of Knockincawley-road, Galbally-road, and Emly-roads. The houses in these localities are, in many instances, one-storied buildings with thatched roofs, earthen floors, and defective in construction, ventilation, and lighting. Over-crowding also exists. Several houses for the artisan class have recently been erected, but an urgent necessity exists for the better housing of the labouring classes and the demolition of insanitary dwellings.

The water supply of Tipperary urban district is obtained by gravi-<sup>Water supply</sup>tation from springs on the Galtee Mountains, about seven miles distant from the town of Tipperary. The water is conveyed in six-inch pipes direct from the springs to a reservoir on Cordangan Mountains, capable of holding 300,000 gallons. The reservoir is 186 feet above the highest part of the town. The water is conveyed from the reservoir to the town in six-inch pipes, and distributed to all parts of the urban district, including military barracks, Union Work-house, &c., &c. The supply is ample for all purposes, and of excellent quality although unfiltered; the quantity available per head per day is thirty-five gallons.

Previous to the introduction of the present water supply, the town was mainly dependent for its water supply on the Church Well, the water from which is still used to a certain extent. About one-half of the houses in the district are provided with domestic water supplies. There are thirty-two public fountains in different parts of the district for the supply of the remainder.

There was no map of the system of sewers available for inspection, <sup>Sewerage and drainage.</sup> but I was informed that all of the streets, lanes, &c., except the rear of Church-street, were provided with sewers. The sewers in the Main-street are constructed of masonry, and in the smaller streets piped. The sewers are said to be well constructed, properly trapped, and ventilated. In the main streets and some of the smaller streets the houses and yards are connected with the system of sewers, but in the poorer localities the premises are unconnected, and no provision is made for the efficient drainage of the yards. The outfall of the sewerage system is into a large settling tank at Longford, which is about 400 yards outside the boundary of the urban district. The effluent from the tank discharges directly into a stream, polluting it to such an extent as to render it merely an open sewer. Surface irrigation, or some other process of dealing with the sewage should be adopted so as to prevent, as far as possible, the pollution of the stream, which in its present state is a serious nuisance to several landowners along its course. Consequent on the introduction of the water supply a large number of water-closets have been erected, which add greatly to the pollution of the stream.

In about 400 of the houses the excrement is disposed of on the water-carriage system; about 100 are provided with midden privies, and the remainder have no sanitary conveniences, the excrement being deposited on the ash heaps in the yards, or deposited on the nearest gully-trap in the streets. <sup>Excrement and refuse disposal.</sup>

The Sanitary Authority do not undertake the domestic scavenging. This is done by the occupiers of houses, and is performed in a very unsatisfactory manner, the refuse, as a rule, being removed only once or twice in the year, the consequence being that the yards are generally in a filthy state from large collections of refuse, &c. In many instances there are no back entrances to the yards, necessitating the removal of the refuse, &c., through the dwellings. The scavenging of the streets is done by contract, two men with a horse and cart being employed at this work. The road scrapings, &c., are removed to the manure depôt at Brodeen, which adjoins the public road, and is close to the houses in the Spittle. The site of the depôt is objectionable.

**Slaughter-houses.** There are five slaughter-houses in the district. With one exception, they are situate close to dwellings, and cleanliness is not sufficiently observed. Two are structurally bad, and quite unsuited for the purpose.

**Common lodging-houses.** The common lodging-houses have not been registered by the Urban District Council. There are ten such houses in the district, only a few of which could be considered suitable for the purpose. Sanitary conveniences are not generally provided in connection with these houses, and cleanliness is not, as a rule, sufficiently observed. There is an Inspector of Common Lodging-houses who visits occasionally.

**Dairies, cowsheds, and milkshops.** There are no dairies or milk-shops, properly speaking, in the district, the milk being delivered direct to the customers by the cow-keepers. There are five cow-sheds in the district, all of which are structurally bad, defectively drained, and kept in a filthy state; quantities of manure are accumulated in their vicinity, and their situations are objectionable owing to proximity to dwellings.

**Sanitary administration.** The town of Tipperary, having so recently as April, 1900, been constituted an urban district, very little sanitary business has up to the present been transacted. The Executive Sanitary Officer, Mr. Dawson, keeps the minutes of proceedings of the Sanitary Authority, and his report book is duly posted. During the past year the Medical Officer of Health, Dr. O'Dwyer, furnished twenty-two reports to the Sanitary Authority, on which, with one or two exceptions, no action has been taken. The Sanitary Sub-Officer, Mr. E. O'Neill, is also Relieving Officer and Sanitary Sub-Officer for a considerable portion of the Tipperary No. 1 Rural District. He does not attend the meetings of the Urban District Council or furnish reports to the Council, nor does he keep a diary showing the sanitary work which he performs. He does not serve notices for the abatement of nuisances and report whether such have been complied with. During the past year he furnished twenty-three reports to the Medical Officer of Health, a number entirely insufficient having regard to the insanitary conditions which prevail. Mr. O'Neill, owing to the duties which he is called upon to discharge in connection with the offices of Relieving Officer and Sanitary Sub-Officer of the Tipperary Rural District, has not sufficient time at his disposal to discharge efficiently the duties of Sanitary Sub-Officer of Tipperary Urban District. It would require the Sanitary Sub-Officer in an important town such as Tipperary to devote almost his whole time to the discharge of the duties. The Sanitary Authority have also in their employment a Town Surveyor, Mr. O'Connor, who receives a salary of £5 per



annum. A Street Inspector and Inspector of Common Lodging-houses, M. Delaney, at a salary of £52 per annum. A Caretaker of the sewerage work, T. Piatt, at a salary of £26 per annum, and a Curator of the Waterworks at a salary of £105 per annum. The inspection of the streets is, properly speaking, the duty of the Town Surveyor, and the inspection of common lodging-houses and supervision of the sewerage works could be discharged by the Sanitary Sub-Officer.

There are about ten miles of roads, streets, lanes, and passages in the district.

The town is lighted by sixty-eight gas-lamps under contract with the Gas Company.

The Infectious Disease (Notification) Act, 1889, has been in force in the district since the 1st January last.

The Workhouse Fever Hospital is available for the reception and treatment of cases of infectious diseases occurring in the district, and the Fever Hospital ambulance for the conveyance of patients suffering from diseases of an infectious nature to hospital.

The Urban District Council do not possess a disinfecting apparatus.

There are no bye-laws under the Public Health Acts in force in the district.

The matters requiring the early attention of the Sanitary Authority are as follows :—

Recom-  
menda-  
tions.

- (1.) The better housing of the poorer classes by requiring sanitary defects in existing dwellings, occupied by this class, to be rectified, or providing new dwellings if requisite.
- (2.) The prevention of the pollution of the river by the effluent from the sewage tank at Longford.
- (3.) Requiring all premises to be connected with the sewerage system.
- (4.) The domestic scavenging of the district should either be undertaken by the Sanitary Authority, or bye-laws adopted imposing this duty on the occupiers of houses.
- (5.) Sanitary conveniences should be provided in connection with all houses, or movable receptacles for the ashes and refuse, which should be cleaned out as often as necessary.
- (6.) Regulations should be adopted and enforced with respect to dairies, cow-sheds, and milk-shops.
- (7.) Piggeries should be abolished where they are in close proximity to dwellings, or likely to give rise to nuisances.
- (8.) Common lodging-houses should be registered and regularly inspected.
- (9.) A disinfecting apparatus should be provided.

- (10.) Bye-laws under the Public Health Acts relating to the following matters should be adopted and enforced in the district:—

The cleansing of footways and pavements.

The removal of refuse and cleansing of privies and ash-pits.

With respect to nuisances and the keeping of animals on premises.

For the regulation of common lodging-houses.

Houses let in lodgings, and slaughter-houses, &c.

- (11.) The more vigorous application of the provisions of the Public Health Act with regard to the abatement of nuisances and insanitary conditions generally.

THOMAS J. BROWNE,

Medical Inspector.

April, 1901.

## TULLAMORE.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE TULLAMORE  
URBAN DISTRICT.

BY DR. D. EDGAR FLINN.

The urban district of Tullamore was constituted in November, 1899. Previous to that time the town was under the jurisdiction of Town Commissioners elected under the Towns Improvement Act, 1854. Brief municipal history.

Tullamore is the principal town in the King's County, and is the centre of a large and populous district. The Assizes are held there, and, as a market and business centre, it commands a large amount of patronage and support. Tullamore is situated quite near to that immense tract of moor known as the Bog of Allen. The population in 1891 was 4,522, the number of inhabited houses 861, and the present area 840 acres 2 roods and 32 perches. It is proposed to enlarge the existing area, which will add to the valuation; the present valuation is £6,167 11s., derived as follows:—

	£	s.	d.
Land, . . . . .	871	19	0
Buildings, . . . . .	4,958	2	0
Other hereditaments, . . . . .	337	10	0
Total, . . . . .	6,167	11	0

The area recommended to be added will increase the present valuation to £7,263 11s., and the urban district will be extended to 1,933 acres 1 rood and 29 perches. This extension has been approved of, but will not come into operation for some time. The Urban Council consists of thirteen members, and their meetings are held on the first and third Wednesdays in each month.

The conditions and surroundings of the dwellings inhabited by the working classes are of a very inferior description, and the houses, in the majority of instances, are devoid of those sanitary requirements that are conducive to the health of a town. The absence of privy and ashpit accommodation is very general, and the construction of the houses tends to overcrowding, many of these houses having no back-yard accommodation, while in others the back yards are very small and are not drained, filth and manure accumulations being found in many cases quite near to the back doors. Pigs are also kept in confined back yards, where there is no proper space, and in many places the pig sty is placed quite near the dwelling-house. Dwellings of the class I refer to are to be met with in Ruddick's-lane, Upper Barrack-street, O'Connell-row, Upper Pensioners'-row, Upper and Lower Milestone-lane, Wheelwright-lane, Baldwin-lane, &c. The question of the provision of healthy dwellings for the working classes

The housing of the working classes.

Water  
supply.

is one that should be earnestly taken into consideration by the Council. A loan of £2,250 has recently been sanctioned for the erection of twelve houses, but judging from the large number of insanitary and congested areas in the town, the Council will, it is to be hoped, at a future date, still further make provision for the improvement of the conditions under which the labouring classes live.

Tullamore is fortunate in having a good water supply. The scheme for supplying the town with water was carried out by the former Rural Sanitary Authority at a cost of £10,720. A Provisional Order was obtained in April, 1892, for this object, and a further amended Order was issued in April, 1894. The supply is taken from the Claddagh River near the village of Clonaslee at a point about ten miles from Tullamore. At a short distance from the intake there is a storage tank capable of holding 400,000 gallons; there are also two filter-beds, one measuring  $27\frac{1}{2}$  feet in length by 26 feet in breadth, and the other 33 feet in length by 29 feet in breadth; both filter-beds have a depth of 7 feet 6 inches.

The filtering material used is as follows:—

- (1.) A layer of earthenware pipes on the bottom of filter-bed.
- (2.) A layer of coarse stones.
- (3.) A layer of coarse gravel.
- (4.) Fine sand, two feet in depth.

The water is conveyed from Clonaslee to the town in 7-inch cast-iron pipes for about three-quarters of the distance, and 6-inch pipes for the remaining portion of the distance, the distributing mains to the town being about four and three inches respectively in diameter. The catchment area is of considerable size, and within this area are the townlands of Barradoo, Glankeen, and Brittas; the district is a mountainous one, and there are about twelve inhabited houses within the area. The river, at the intake, I am informed, is about 100 feet above the highest point in the town. The quantity per head per diem is estimated at about twenty gallons. A considerable revenue, about £200 per annum, is derived from the Waterworks, and this source of income is likely to increase.

Sewerage  
system.

The sewerage of the town generally cannot be regarded as in a satisfactory condition. There is, I understand, a system of old sewers constructed of rubble masonry with paved bottoms, and covered with limestone flags. From their construction these sewers cannot effectually fulfil the purpose for which they are intended. A very objectionable feature in connection with this sewerage system is that all the sewage matter finds its way into the river that runs through the town, and the pollution that takes place is very evident. On the occasion of my inspection I took occasion to examine and observe the condition of the river at various points through the principal portion of the town. The bottom of the river appeared to be in a very foul condition, the mud being black as well as emitting an unpleasant odour; this is not to be wondered at when it is remembered that all the sewers and house drains discharge directly into the river, and have always done so, in addition the river appears to be made a repository for all sorts of rubbish. It is plain that the first and most urgent question to be dealt with is that of the sewerage, and it is earnestly to be hoped that, in the interests of the public health of Tullamore, and at the earliest possible moment, a scheme dealing with this vitally important matter

will be taken into consideration. The continued wholesale pollution of the river is detrimental to the health of the inhabitants, and must exercise more or less a deteriorating influence on the sanitary condition of the town.

The absence generally of privy and ashpit accommodation in the areas inhabited by the labouring classes tends to make this class dispose of their refuse by throwing it upon the ground either in the back yards or in the nearest place available. The result is that accumulations of organic and vegetable filth are deposited in the back yards, and remain unremoved for very long periods. In connection with this question the Council might consider the advisability of adopting a system of domestic scavenging which would provide remedy for the insanitary conditions before mentioned. In the absence of a refuse destructor the provision of a dépôt outside the inhabited area for the storage of refuse would be very desirable. Dumping grounds for the storage of refuse matter should not on any account be permitted within the urban area. The ground in the vicinity of the barracks, which is situated in the centre of the town, is apparently used for this purpose at present.

The scavenging and public cleansing of the principal streets is fairly well done, but there is still great need for improvement, and in the small bye-lanes and thoroughfares there is not apparently enough attention given to the removal of refuse. In these localities domestic slops and filth find their way in many places from back yards into the surface channels where there are any, and, where they do not exist, it lodges on the surface and creates a nuisance in many places. On the occasion of my inspection, I noticed that the street surface channels were out of repair, and thus favoured the stagnation of water, as well as the lodgment of unwholesome matter.

The staff engaged in public cleansing consists of four men who are employed by the Council under the supervision of the Town Surveyor. Horses and carts are employed as required by the day for the removal of mud and street refuse. From a sanitary, as well as from an economical point of view, the Council would do well to provide a horse and cart or two (which would be their own property) for the purpose of more efficiently carrying out public cleansing and scavenging, as the daily removal of refuse from the smaller thoroughfares and back lanes is of great sanitary importance, and exercises a very beneficial effect, more especially where there are congested areas and where filth and domestic refuse is cast on to the laneways, &c.

I visited a few of the cow-sheds, and those that I saw lacked both cleanliness and sufficient ventilation. Frequent inspection of the cow-sheds and dairy-yards would be very desirable, as manure accumulations are permitted to remain unremoved for much too long a time. In one instance, moreover, there was a pig-stye in close proximity to the cow-shed, and in another the cow-shed was much too close to a dwelling-house. Pigs should not be allowed on dairy premises, from which there is a distribution of milk to the general public. The Council should take into consideration the advisability of adopting the model regulations of the Local Government Board for the management of the cow-sheds and dairies in the town.

The slaughter-houses, as a rule, appeared to be fairly well kept. The frequent removal of offal from the slaughter-houses should be insisted on, and the Council would do well to adopt bye-laws dealing with slaughter-houses.

Recom-  
menda-  
tions.

A code of general bye-laws under the Public Health Acts is at present under the consideration of the Council. The adoption of bye-laws dealing with nuisances, keeping of animals, lodging-houses, slaughter-houses, new buildings, and streets will assist very materially in the sanitary administration of the town, and as a means of dealing promptly with nuisances and other insanitary conditions, bye-laws are invaluable and are a great aid to a Sanitary Authority.

The Council would act wisely in taking steps to adopt the Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890, as the adoption of these Acts would be very beneficial in a town like Tullamore.

The Medical Officer of Health is Dr. George Moorhead, F.R.C.S., who keeps himself fully acquainted with, and takes an active interest in the sanitary circumstances of his district. He furnishes reports to the Council at frequent intervals, and has drawn attention to the insanitary conditions that are adverse to the public health of the town. Dr. Moorhead is also Medical Officer to the Workhouse Infirmary and to the Tullamore Dispensary District.

The Executive Sanitary Officer and Clerk to the Council is Mr. E. J. Graham.

I desire to express my thanks to both the Executive Sanitary Officer and the Medical Officer of Health for the assistance given to me during the course of my inquiries.

D. EDGAR FLINN,

Medical Inspector.

October, 1901.

## TRALEE.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE TRALEE URBAN DISTRICT.

BY DR. T. J. BROWNE.

The Tralee urban district comprises an area of 542 acres. The General population, according to the last Census, was 9,218, the number of Description inhabited houses, 1,518. In the year 1900 the birth-rate was 33·4, the death-rate from all causes, 28·7, and the death-rate from the principal zymotic diseases, 2·3 per 1,000 of the population. The last rateable value is given at £14,465 14s., and shows a gradual yearly increase. The town of Tralee is situate on the River Lee, about two miles inland from the shores of Tralee Bay. The river is tidal as far up in its course as the town. The town lies in a hollow surrounded by a range of high hills on the north-west, and by gradually rising ground on the east and south. The natural drainage is, therefore, directed towards the town, causing wetness of site. The climate is moist and equable. The greater portion of the district is of a rural character, consisting of pasture lands and a large park. The populated portion covers a small area, and consequently there is considerable crowding on space, the poorer portion of the population living in narrow, confined laneways off the principal streets. Tralee is the market town of a large agricultural area. Tri-weekly markets are held, and a good trade is done in grain, bacon, butter, and other kinds of farm produce. The principal industries are milling and bacon curing. The proportion of the population belonging to the poorer class is large, composed principally of small general dealers and labourers, who are not, as a rule, constantly employed.

Limestone with coal measures on northern side, and brown sand- Geological stone on southern side. Formation

The water supply of the district is obtained by gravitation from Water springs and the natural drainage of the slopes of Curraheen Mountain, supply. situate about four miles north-west of the town. The catchment area is composed principally of brown sandstone, and is far removed from all sources of contamination. The supply is reported to be sufficient and of good quality. Most of the better class of houses are provided with domestic supplies. The poorer people get their supply from stand-pipes distributed over the town. The cost of the water supply up to the present has been £15,666, and it is proposed to expend a further sum of £3,000 in improving it.

## Sewerage.

The principal streets are provided with piped sewers, which discharge into the river in its course through the town. The sewers are provided with gully-traps, but are not properly ventilated. The lanes with few exceptions are unsewered, the surface water, house slops, &c., being conveyed in surface channels to the nearest sewers. During the summer months, when the volume of water in the river is low, its state is very foul owing to the sewage being discharged into it.

During recent years a sum of £1,200 has been expended in improving the sewerage system, and it is proposed to expend a further sum of £350 in providing new sewers. A much larger sum is required to provide for the proper sewerage of the lanes, and an intercepting sewer to carry the sewage to a proper distance from the town before discharging into the river.

## Excrement and refuse disposal.

The better class of houses are provided with water-closets. Many of the middle class of houses and those occupied by the working class are provided with midden privies with ashpits attached, into which all kinds of refuse are thrown. The privies and ashpits are only cleaned out at long intervals, when, in many instances, the contents have to be removed through the dwelling-houses, there being no back entrance to the yards. The privies and ashpits are generally of faulty construction, and too close to the dwellings, but the latter is unavoidable owing to the smallness of the yards. There are several back-to-back houses without yards. Slops and refuse of all kinds are deposited on the streets, which are scavenged daily, but no sooner are they cleaned than they are fouled again by fresh deposits of filth, which increases until the next visit of the scavengers. The Sanitary Authority does not undertake the domestic scavenging, and great difficulty is experienced, especially by the poorer class, in having the refuse, &c., removed from their yards; hence the filthy state in which they are generally to be found. The Sanitary Authority employ twenty-six men with four horses and carts to scavenge and remove refuse, &c., from the streets to the manure dépôt. With a slightly increased staff the domestic scavenging might be undertaken by the Sanitary Authority. The manure dépôt is in a very objectionable situation, being in a confined space, and close to a bacon curing establishment and several occupied dwellings.

## Dwelling accommodation.

The number of inhabited houses in the district is 1,518. In the main streets the houses are, generally speaking, of a fairly good description. A large proportion of the dwellings, chiefly those occupied by the poorer classes, are situate in narrow confined lanes off the principal streets. These houses are of a very poor class, deficient in lighting, ventilation and air space. In many instances the houses are overcrowded and in a filthy state. The majority have yards attached which are unpaved, or imperfectly paved, and without proper provision for drainage. Piggeries in these small yards add to their insanitary condition. The number of houses with yards or gardens, and privies or water-closets is 1,223. These houses are tenanted by 7,593 individuals. The number of houses without yards or sanitary conveniences is 295, tenanted by 1,725 persons. The following are the most insanitary localities in the district:—Mary-street, Lower Abbey-street, Green-lane, McCowan's-lane, Walpole's-lane, Giles-lane (Ballymullin), Blackpool, Boherbee, Moyderwell, Five Alley-lane, Brogue-lane, Dean's-lane, Waterloo-lane, White's-lane, Commons-lane, Donovan's-lane, Chute's-lane, and Kane's-lane. An urgent necessity exists for the provision of healthy



dwellings for the poorer classes in the district. The Sanitary Authority propose expending £1,000 with this object, but this sum will go a very short way in relieving the existing congestion.

The number of common lodging-houses in the district is reported to be about eighteen, but it is probable there are many more. They are not registered or supervised in any way; some of them are filthy, dilapidated, and unsuitable as lodging-houses. Common lodging-houses.

There is a public abattoir and fifteen private slaughter-houses in the district; six are situate in Waterloo-lane, three in Ahhey-street, three in Ahhey-lane, one in Church-place, and one each in Moyderwell and Bridge-lane. All of the private slaughter-houses are situate too close to dwellings and in populous centres. With the exception of the one in Bridge-lane and the public abattoir, they are structurally defective and devoid of proper provision for drainage or flushing; the floors are generally paved and porous. In a few instances pigs are kept close to the slaughter-houses; also large quantities of manure and offal are stored in their vicinity. There is practically little or no supervision exercised over slaughter-houses, and nearly all of them I found in a very filthy and insanitary state. In two instances animals are slaughtered in the dwelling-houses. Slaughter-houses.

The keeping of pigs in small confined yards and in places unsuitable for the purpose is general throughout the district, and gives rise to very insanitary conditions, the piggeries being, as a rule, close to dwellings, badly constructed, and without proper means of drainage. Keeping of animals on premises.

There are a few cow-sheds in the district; these are faulty as regards cubic space, ventilation, and drainage, and in some instances cleanliness is not observed. The number of dairies and milk-shops is about thirty; some of the latter are not kept in a cleanly state, and no supervision is exercised over them. Dairies, cowsheds, and milkshops.

The district is under the control of the Urban District Council, which consists of twenty members and meets fortnightly. Dr. Falvey is Medical Superintendent Officer of Health, and attends meetings of the Council, and advises as to questions of sanitation generally. Drs. Hayes and Denny are the Medical Officers of Health, and make occasional reports to the Sanitary Authority when their attention is drawn by the Sanitary Sub-Officer to any matters requiring to be dealt with under the provisions of the Public Health Act. During the past year Dr. Hayes furnished fifteen reports and Dr. Denny twelve. There is one Sanitary Sub-Officer, Mr. Brosnan, who is supposed to devote his whole time to the duties of the office. He was appointed about two years ago. Previous to his appointment he had no sanitary training, and to this circumstance chiefly is to be attributed his failure to bring under the notice of the Medical Officers of Health and the Sanitary Authority many insanitary conditions demanding attention. Mr. Brosnan attends the meetings of the Sanitary Authority, and submits reports at each meeting. Systematic and careful inspections of the district cannot be said to have been made by this officer, and many serious forms of nuisances have been overlooked, or not reported. During the past year 440 notices for the abatement of nuisances have been served; prosecutions were instituted in fifty-four instances to compel compliance with notices, and the necessary orders obtained. Seventy-three samples of butter, milk, &c., were Sanitary Administration

submitted for analysis; prosecutions were instituted in nine instances and convictions obtained. There are no bye-laws under the Public Health Act in force in the district. The dairies, cow-sheds, and milk-shops are not inspected. The Infectious Diseases (Notification) and (Prevention) Acts are not in force in the district. There is a hospital for infectious diseases in the district, with accommodation for about eighty patients; also a disinfecting apparatus, which seems to be efficient. The hospital was provided by the county. It is very poorly equipped, and is in need of repair. A return showing the number, nature of disease, and localities in the Tralee Urban District from which patients were admitted for ten years, 1889-1898, is appended to report. It will be noticed that outbreaks of preventible disease are of common occurrence, and that a large proportion came from the most insanitary localities before mentioned, the cause, no doubt, being the insanitary conditions which prevail in those places, and which I have referred to, viz., overcrowding, filth, poverty, the wretched and insanitary dwellings of the poor, defective drainage, foul ashpits and privies, absence of sanitary conveniences in many instances, piggeries, collection of manure and filth in yards, neglected domestic scavenging, foul state of the laneways, and the situation and condition of the slaughter-houses, cow-sheds, and milk-shops. These conditions, in addition to causing outbreaks of zymotic disease, also exercise a marked influence on the general health of the community, enfeebling their constitutions, and rendering them less liable to resist the onset of disease. The abnormally high death-rate which occurred in Tralee Urban District during the first quarter of the present year must be attributed to the influences stated, as there was no serious outbreak of disease during that period, with the exception of influenza, which was also very generally prevalent throughout Ireland. For some weeks during the quarter under review the deaths registered as having occurred in Tralee Urban District correspond to an annual death-rate of 83.9 per 1,000 persons. During the year ended 31st March, 1900, the number of deaths in Tralee Urban District from zymotic disease was as follows:—Measles, 10; typhus fever, 6; enteric fever, 3; diphtheria, 4; diarrhoea, 6. Phthisis, or pulmonary consumption, caused a large number of deaths (nineteen during quarter ended 31st March, 1900.) The average annual death-rate represented by the deaths from all causes registered during the quarter ended 31st March, 1900, in Tralee Urban District (exclusive of deaths in public institutions admitted from without the district) was 50.2 per 1,000 persons. This was the highest death-rate registered for the period named in any of the twenty-two principal urban districts in Ireland.

Recommenda-  
tions.

The sanitary shortcomings of Tralee Urban District, which I have indicated, manifestly call for prompt and energetic action on the part of the District Council. The unwholesome housing of the working classes demands their earnest consideration; healthy dwellings at moderate rents should be provided. The many conditions already enumerated which go to make the present dwellings of the poor unhealthy should be remedied where practicable, and where not possible, without an excessive expenditure, the houses should be demolished so soon as healthy dwellings are available. Action could be taken with the object of clearing unhealthy areas under Part I. and II. of the Housing of the Working Classes Act, 1890. The portion of the district unserved should be provided with a proper system of sewers, and the outfall should be into the tidal

portion of the river. Better provision for ventilating the existing sewers should be provided.

The Sanitary Authority should undertake the domestic scavenging of the district, and require each house to be provided with a covered receptacle for ashes and other refuse, which should be emptied as often as necessary. Midden privies should be replaced by water-closets, or the pail system should be adopted. The manure depôt should be transferred to a suitable site.

The common lodging-houses should be registered and regularly inspected. The dairies, cow-sheds, and milk-shops should be regularly inspected, and the provisions of the Order relating thereto should be enforced.

Systematic and frequent inspection of the district should be made for the purpose of the detection and abatement of nuisances.

A code of bye-laws under the Public Health Act should be adopted and enforced.

The slaughtering of animals on unsuitable premises should be put an end to, and slaughtering in the abattoir insisted upon.

THOMAS J. BROWNE,  
Medical Inspector.

June, 1900.

STATISTICS of COUNTY KERRY FEVER HOSPITAL for the Years from  
1889 to 1898, inclusive, relative to the Urban District of Tralee.

Streets and Lanes.	Typhus.	Typhoid.	Febri- cula.	Pneu- monia.	Observations.
Abbey-street, ... ..	7	-	1	1	Scarlatina and Measles not in- cluded in Return.  F. J. FAIVREY, Tralee.
Ballymullea, ... ..	24	1	-	-	
Blackpool, ... ..	1	-	-	-	
Blennerville, ... ..	3	1	1	1	
Boherbee, ... ..	21	-	1	3	
Bridge-street, ... ..	3	-	-	-	
Bryans-lane (including Steeple View and John-streets, Caberma, and Spa and Pond,	17	1	2	2	
Castle-street, ... ..	2	3	1	-	
Chapel-lane, ... ..	1	-	-	-	
Cleamore-terrace, ... ..	1	-	1	-	
Davy's-lane, ... ..	-	-	2	-	
Dawson-lane and terrace, ... ..	8	-	-	-	
Day-place, ... ..	-	1	-	-	
Denn's-lane, ... ..	15	1	3	-	
Edward-street, ... ..	2	-	-	-	
Fever Hospital, ... ..	1	-	2	-	
Gas-terrace, ... ..	-	-	1	-	
Giles's-lane, ... ..	1	-	-	-	
Green-lane, ... ..	1	-	-	1	
James-street, ... ..	2	1	-	-	
Mall, ... ..	1	-	-	-	
Mary-street, ... ..	12	11	1	1	
Military Barracks, ... ..	1	-	-	-	
Moyderwell, ... ..	27	2	6	2	
Nelson-street, ... ..	1	-	-	-	
Pound-lane, ... ..	-	-	-	1	
Prince's-street, ... ..	1	1	-	-	
Rock-street, ... ..	19	1	1	2	
Square, ... ..	-	-	1	-	
Staff (Militia) Barracks, ... ..	-	1	1	-	
Strand-street, ... ..	5	1	5	3	
Tralee, ... ..	3	1	1	2	
Walpole's-lane, ... ..	23	-	2	1	
Total, ... ..	228	28	41	20	

## WEXFORD.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE WEXFORD URBAN DISTRICT.

BY DR. D. EDGAR FLINN.

In the year 1891 the urban district of Wexford contained a population of 11,545,\* the number of inhabited houses being 2,102, and the area of the borough 483 acres. Brief municipal history.

In the year 1900 the birth-rate was 25·5, the death-rate from all causes 21·9, and the death-rate from the principal zymotic diseases 0·3 per 1,000 of the population.

The town is situated on the southern bank of the River Slaney, which discharges into Wexford harbour, and, for administrative purposes, the town is divided into three wards, viz., St. Selskar Ward, St. Iherius Ward, and St. Mary's Ward. The Corporation consists of the Mayor, six Aldermen, and seventeen Councillors. The total rateable value of the borough is £17,129 11s., and the current district rate is 6s. 2d. in the pound (including municipal rates and poor rate).

Considerable employment is given to the working classes, and there are several manufactories, including two large ironworks, distillery, brewery, several malt-houses, and mineral water works; clay pipe factory, flour mills, saw mills, &c. The Corporation of Wexford has a considerable income from lands and houses (within and without the borough area), markets and tolls, cemetery fines, &c., and also a good revenue from a water rate and the supply of water to manufacturers.

The sanitary staff consists of:—

Sanitary staff.

Consulting Sanitary Officer—Dr. J. Crean.

The Medical Officer of Health—Dr. T. Pierce.

Executive Sanitary Officer—Mr. W. A. Browne; and two Sanitary Sub-Officers.

The main geological features about Wexford are the hard slates and grits with masses of quartzite that predominate. The rocks at and about the town belong to the Cambrian formation. To the north of the town, and again to the south, these Cambrian rocks are margined by a narrow band of sandstone, the shore beds of the ancient carboniferous sea, and this is succeeded by a wide tract of limestone formation. Geological features.

Provisional Orders have been obtained for the following purposes:—(1.) The transfer of powers from the Grand Jury to the Council in regard to the maintenance of roads and streets within the borough (1873). (2.) Authorising the Council to take land compulsorily, and obtain a loan for the purposes of a water supply, &c. (1876). (3.) Dealing with mail-car roads in the borough (1887). (4.) Empowering the Corporation to take land compulsorily for the purpose of a cemetery (1890). Provisional Orders.

\* Population according to the Census of 1901, is 11,164.

The  
sewerage  
system.

The present sewerage system cannot be regarded as satisfactory, the majority of the sewers being constructed of rubble masonry, with covered flag tops, and only a few made of a modern pattern. It is estimated that there are about 2,660 perches of sewers in the town, of which about 620 perches are of the glazed earthenware pattern. The sewage is discharged through several outlets directly into the harbour. A considerable amount of sewage matter finds its way into the Stonebridge River, a small stream which passes through a populous portion of the town, and which ultimately flows into the harbour. There is also a second smaller stream, which receives a large percentage of sewage matter. The first-named stream, for a portion of its course through the town, partakes practically of the character of an open sewer and, in some places, runs in close proximity to a large number of dwellings. I am informed that about 300 dwelling-houses discharge their drainage directly into the Stonebridge River.

Ventila-  
tion and  
sewers.

There is practically no system of ventilation of the sewers, and no proper arrangements are made for their inspection. There is one exception, however, and that occurs in a new main sewer that was constructed in 1900, and which has three ventilators along its course. Sewer ventilation is nearly as important as sewer flushing, though neither one nor the other can safely be dispensed with in any system of sewerage. It is an acknowledged fact that in order to prevent the concentration of sewer gas and reduce to a minimum the decomposition of organic substances contained in sewage matter, it is of the greatest importance that openings communicating with the sewers should be provided, to afford an outlet for the foul gases and secure the free admission of fresh air. No system of sewerage can be depended upon to fulfil its sanitary mission, or be considered efficient, unless ample provision is made for ventilation, and the Urban Council should take steps without delay to provide the necessary means of ventilation for the extensive sewerage system under their control. I am informed that the flushing of the sewers also cannot be satisfactorily carried out. The gradients of the sewers in the higher portion of the town vary as regards fall from 1 in 20 to 1 in 30; in the lower level portions the gradient ranges from 1 in 900 to 1 in 1,200, and these sewers are subject to tidal flows and periodical flooding.

Water  
supply.

The waterworks, constructed in 1880, are situate about three miles from Wexford. The water is impounded in a reservoir at Coolree, fed by three small streams, all of which rise in the mountain of Forth. The storage capacity of the reservoir is about 22,000,000 gallons, and the catchment area is about 770 acres in extent. Provision is made for a three months' supply, and the allowance per head per diem averages 20 gallons for all purposes. The water is conveyed by gravitation in pipes to the town, the reservoir being 200 feet above the lowest level of the town, and 130 feet above the highest point. Within the catchment area are several inhabited dwellings, situated at some distance from each other. Occasionally, during the summer months, the supply of water is limited and intermittent. There is no filtration of the water, and in view of the general practice of filtering, all public water supplies, but more especially those partaking of the peaty character, which obtains here a system of filtration, would be not only desirable but necessary. As a considerable revenue is derived from the rate levied for the supply of water (the total amount received from

general consumers and manufacturers, roughly, amounting to £1,700 per annum), and, as the most recent analysis of the water tends to show, that it would be much benefited by being subjected to a process of filtration, it is to be hoped that the Sanitary Authority will lose no time in providing suitable filter beds.

The unfavourable conditions under which a considerable percentage of the labouring classes live in Wexford need improvement, but the Urban Council deserve great credit for having already erected a number of dwellings under the Housing of the Working Classes Act, in Hill-street, Trinity-street, and Carrigeen. The success that has attended these schemes should encourage the Council to endeavour to make still further provision for the better housing of the working classes. A great many of the dwellings at present occupied by this class are devoid of the most elementary form of sanitation, and some are unfit for human habitation. A large number of houses (about ninety) are without any back yard accommodation whatsoever; in other cases the back yards are wretchedly small and kept in a filthy condition. The absence of privy and ashpit accommodation for the vast majority of the houses inhabited by the poorer classes, is a matter deserving of the earnest attention of the Urban Council. The accumulations of organic and vegetable refuse matter in the small back yards is a positive menace to the general health of the town, and the Urban Council would do well to consider the advisability of putting section 52 of the Public Health (Ireland) Act, 1878, into force. A limited outbreak of typhus fever, which occurred in August and September, 1900, in one of the insanitary areas, was attributed to accumulations of filth and overcrowding. The active preventive measures that were taken by the Medical Officer of Health at the time prevented the further spread of the disease, but had it obtained a foothold, it is probable that the consequences might have been very serious, as the insanitary and densely populated areas in the town would have been a fertile soil for propagating this disease.

Bye-laws are in force dealing with the public market, waterworks, and common lodging-houses, but none in regard to slaughter-houses, buildings, keeping of animals, &c.; neither have regulations been made as to dairies, cowsheds, and milkshops.

The public cleansing and scavenging of the main thoroughfares appear to be fairly well carried out, and it is evident that considerable attention is paid to the principal streets. The bye-lanes and less frequented thoroughfares are, on the other hand, not so well cared for, and refuse and objectionable matter from the poorer class of houses is cast on to the laneways and allowed to remain too long without being removed. The daily removal of street refuse and filth from the more congested and poorer areas, and the daily scavenging of these areas, would be of much advantage to the health of the town, more especially as most of the thoroughfares in Wexford are narrow, with a large population crowded on a limited area. There are very few towns in Ireland that possess such a density of population for its size and acreage as Wexford; hence, public and domestic cleansing and filth removal should be carried out in the best and most approved manner in the interests of the health of the inhabitants.

I am informed that there are eight slaughter-houses within the urban district. Those that I saw were fairly well kept.

**Cowsheds and dairies.** There are twenty-one cowsheds, eight slaughter-houses, and forty dairies and milkshops. The cowsheds require to be regularly and systematically inspected. I visited a few of them and they lacked both cleanliness and sufficient ventilation, while large accumulations of manure were in evidence at each place. The Council should adopt the Board's Model Regulations for the management of cowsheds and milkshops within the urban district, and appoint an inspector to see that they are duly enforced.

**Outbreak of measles.** An outbreak of measles, which spread generally throughout the whole of the urban district, commenced, it would appear, in January last. Dr. Pierce, the Medical Officer of Health, in his first report, dated February 27th, 1901, was of opinion that the disease had its origin in some of the local schools, and from them became quickly epidemic through the district. The schools after some time were all closed, but not until the outbreak had assumed wide proportions. It is estimated that fully seven to eight hundred cases occurred, but the disease was not generally of a virulent type. It is regrettable that in the early stage of the outbreak it was not possible to isolate the first series of cases that occurred, owing to the fact that medical attendance was not sought for, and children, no doubt, attended schools from infected houses. From the time, however, of the closing of the schools active preventive measures were carried out as to disinfection of infected houses, and as to the isolation and removal of patients to hospital. Thirty-eight deaths were registered as having occurred during the outbreak.

**Recommendations.** The Council should seek competent engineering advice as to the best means of carrying out a system of filtration, and thus improve the character of the existing water supply.

Regulations should be made for the management of cowsheds and dairies, and a code of bye-laws adopted in regard to slaughter-houses, buildings, and keeping of animals. The housing of the working classes should also further engage the attention of the Council, as a grave danger exists to the public health from the manner in which a considerable proportion of this class is at present housed.

The daily cleansing and scavenging of the smaller thoroughfares and laneways and congested areas of the town is very necessary, and arrangements should be made to carry this out.

The Council would do well to undertake the domestic scavenging and cleansing of the town, in order to ensure the prompt removal of house refuse and organic filth from back yards.

The adoption of the Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890, would be very desirable in a town of the size and population of Wexford.

A disinfecting chamber also appears to be much required in Wexford.

D. EDGAR FLINN,  
Medical Inspector.

March, 1901.



## WICKLOW.

## REPORT ON THE SANITARY CIRCUMSTANCES AND ADMINISTRATION OF THE WICKLOW URBAN DISTRICT.

BY DR. D. EDGAR FLINN.

The area administered by the Wicklow Urban District Council is about 759 acres in extent, and has a population, according to the Census of 1891, of 4,125. The rateable value reaches to £6,530 15s., and the corporate income derivable from all sources is about £3,568. The boundaries of the urban district are as follow:—On the north it is bounded by the Rathdown No. 2 Rural District and a portion of the Bray Urban District, and on the south by the Rathdrum Rural District. The town rests on what is known as the Silurian rocks series, which may be seen on the shore at the town, and which also form cliffs at the promontory known as Wicklow Head. The district immediately adjoining the town is hilly and forms a good catchment area for an abundant supply of water. Brief sanitary history.

The total number of inhabited houses within the urban district is 730, and there are sixteen artisans' dwellings of a rather good class erected by the Council. The Urban District Council consists of twenty members, who represent the various wards in the town.

The waterworks were inaugurated in 1880, are situated about one and a-half miles from the town, and are fed by two small streams. The catchment area covers about 200 acres; is principally pasture land. There are two dwelling-houses within the area. Water supply.

The reservoir is about four acres in extent, and is situate 120 feet above the highest level of the town, and about 230 feet above the lowest point. It is capable of containing about 9,000,000 gallons of water, and the average supply per head per diem is twenty gallons.

The system of filtration of the water at present in operation cannot be regarded as satisfactory. The filtering beds are constructed in the body of the embankment of the reservoir, are covered in, and are enclosed in a cellular concrete wall; they consist of eight chambers, twelve feet long by nine feet wide, and are thirty feet in depth; within this covered space there are also three clean water chambers of the same dimensions as the filtering beds. These clean water chambers are placed in the centre, and the filtering beds are on each side. Access to these chambers is obtained by a manhole, two feet in diameter, and there are also arched openings from one chamber to the other.

The filtering material in use is as follows:—

Fine sand,	. . .	10 inches.
Gravel,	. . .	8 "
Coarse pebbles,	. . .	6 "

It is obvious from the construction of the filter beds that the process of cleansing and of purification is necessarily carried out

with some difficulty. It is regrettable that two important elements, viz., air and light, which are regarded as largely collateral, and by very many as most essential aids to the purification of water, were not taken into consideration in the construction of these filter beds. The Council would be well advised to earnestly consider the necessity of improving the present system of filtration. Expert engineering opinion has already suggested an improvement in this direction.

The  
sewerage  
system.

The principal and most populous portion of the town is built on the south side of the river, and the sewerage system here consists, I am informed by the Town Surveyor, of about 2,400 yards of dry stone sewers, and of 700 yards of pipe sewers. The stone sewers vary in size from nine to twenty-four inches in width and depth, and the majority have flagged bottoms; these sewers have no means of ventilation. The Town Surveyor states that he has seen most of the stone sewers opened in several places from time to time during the last twenty years, and he has always found them three-fourths full of sewage matter. There is no means of flushing in connection with these sewers, and they all discharge directly into the river at intervals along the south quay, between what is known as the wooden foot-bridge and the harbour, a distance of 600 yards.

Most of the pipe sewers on the side of the river are stated to be in working order, but in consequence of the absence of a proper and uniform method of flushing, these sewers are also liable to become partially blocked with sewage matter.

The Murrough, or north side of the river, is provided with 380 yards of a 15-inch pipe sewer, discharging into the river at the north quay. At the date of my inspection I was informed that a considerable portion of this sewer was blocked and filled with sewage matter, owing to the flatness and insufficient gradient, and the want of a proper system of flushing for some years after its construction. At present this sewer is flushed by hand twice each week, but this flushing is regarded as wholly inadequate, as it is stated the flush merely passes over the solid deposit in the sewer. This portion of the sewerage system is ventilated, but I understand it is laid on a sub-soil of sand and gravel without concrete foundation.

All the sewerage of the town discharges directly into the river within a small area. This is very objectionable from a health point of view.

I am informed that plans have already been prepared by the Surveyor to the Council, Mr. Pansing, C.E., providing for a comprehensive scheme of main drainage, the estimated cost of the scheme being about £4,000. It is contemplated by this scheme to discharge the greater portion of the sewerage of the town into the open sea. It would appear that there is no engineering difficulty in the way, and there can be no doubt of the immense benefit that will accrue to the town if this work is carried out in its entirety. Many of the sewers in their present condition are a cause of anxiety and danger, and a remedy such as the one contemplated is the only solution of what may become a very serious problem if longer delayed.

Cowsheds  
and  
dairies.

The Urban District Council have no regulations in force concerning cowsheds and dairies, the result being that the cowsheds and dairies are not by any means kept in as sanitary a condition as they should be, and accumulations of manure are allowed to remain unremoved for much too long a period. In some instances milk is stored and kept for sale in kitchens and ill-ventilated living rooms. A custom such as this is fraught with great danger and should on

no account be permitted. Some of the cowsheds that I saw were very dirty. The Council should not delay in framing bye-laws to deal with the administration of cowsheds and dairies, more especially in view of the fact that there are such a large number of milk vendors in the town, the total number, I understand, being thirty.

There are five slaughter-houses which, I am informed, are periodically inspected. It is regrettable that no bye-laws have up to the present been adopted in regard to them. Slaughter-houses.

The public cleansing arrangements could be carried out much better than they are at present. This is the case more particularly in regard to the bye-lanes and smaller thoroughfares, where house refuse and filth is allowed to remain too long without being removed. There should be no difficulty of having a system of daily public cleansing in Wicklow over the whole area of the town. Public cleansing.

The condition of the back yards of the dwellings inhabited by the poorer classes also requires the urgent attention of the Urban District Council. Many of these are in a most insanitary condition, and accumulations of manure and vegetable filth in many cases quite near to the dwellings, emitting offensive odours and not being removed for much too long a period. A serious and dangerous nuisance is caused by the storage of these accumulations in close proximity to the dwelling-houses, and also by the keeping of pigs in small and confined back yards.

Prosecutions under Public Health Act, . . . . .	3	Summary of sanitary work carried out during the past year.
Notices served by Sanitary Sub-Officer as to sanitary requirements, . . . . .	125	
Notices served as to nuisances, limewashing, &c., . . . . .	250	
Overcrowding, . . . . .	1	
Notices served by order of District Council, . . . . .	24	

The Sanitary staff consists of:—

Medical Officer of Health—Dr. James Halpin.

Executive Sanitary Officer—Mr. Francis W. M'Phail.

Sanitary Sub-Officer—Mr. Michael Doyle.

The scavenging staff appears limited for the size of a town like Wicklow, and might be increased. At present, I am informed, the Council hire the services of one horse and cart, with attendant, for the purpose of street cleansing and refuse removal, and employ a second scavenger when required.

The Council should at the earliest possible moment consider the desirability of improving the existing system of filtration of the water supply. This is a question that should not be delayed, and should engage the earnest attention of the Council. The question of increasing the present supply is also deserving of consideration. Recommendations.

A main system of sewerage on modern principles is also much needed in the town, and steps should be taken with a view to the provision of a proper system of sewerage. The accumulation of sewage matter in some portions of the town, owing to the defective

sewer construction as well as other causes, is not conducive to the health of the inhabitants. Some method should also be devised to ventilate the present sewers on the south side of the town.

The Council should without delay adopt a code of bye-laws dealing with dairies and cowsheds, slaughter-houses, and common lodging-houses.

The Council should endeavour to ensure that filth accumulations are removed more frequently from the back yards of small houses, and with this object a regular and systematic house-to-house inspection should be undertaken. In this connection the Council might also consider the advisability of adopting themselves a scheme of domestic scavenging and cleansing, for the more prompt and better removal of house refuse, as well as the removal of the contents of privies and ashpits.

The adoption of the Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890, is highly desirable in a town like Wicklow.

I have to thank the officers of the Council for the information and assistance given to me during the course of my inquiry.

D. EDGAR FLINN,  
Medical Inspector.

March, 1901.

# YOUGHAL.

## REPORT ON THE SANITARY CIRCUMSTANCES AND ADMINISTRATION OF THE YOUGHAL URBAN DISTRICT.

By Dr. T. J. BROWNE.

Youghal is a maritime town, situate in the barony of Imokilly, in the East Riding of County Cork. The Youghal urban district comprises an area of 1,202 acres. In 1894 the boundaries were extended, over 300 acres being then added to the district. The population according to the Census of 1891 was 5,722, including the added area, and is a diminishing one. The valuation of the district is £12,000 and the liabilities £13,335. The number of inhabitable houses is about 1,000. The total rates levied during the past year amounted to 6s. 10d. in the pound. Salmon fishing is the chief industry. There are also brick and pottery works. The principal imports are coal and timber, and the exports corn, bricks, and pitwood. Youghal is a favourite seaside resort during the summer months, which causes a considerable temporary addition to the population. Weekly markets and monthly fairs are held in the town.

The better class houses, which comprise about one-half of the total number, are for the most part fairly well circumstanced as regards sanitation, the majority being provided with domestic water supplies and fairly drained. The houses occupied by the poorer classes are to a large extent insanitary, being dilapidated, deficient in air space, ventilation, and lighting. There is a general absence of back yards and sanitary conveniences, the result being that the refuse ashes, &c., are deposited on the streets. The lanes are narrow, being in some instances only six feet wide, while the high buildings situate immediately in the rear of the houses shut out the air and sunlight. Where backyards exist they are usually unpaved and undrained. In many instances pigs are kept in these yards, which adds greatly to the insanitary condition of the dwellings to which they are attached. A great many of these houses are unfit for habitation. The worst localities are Troy's-lane, Murray's-lane, Abraham's-lane, Carey's-lane, Fox's-lane, Power's-lane, Chapel-lane, Sailor's-alley, Hurley's-lane, Cross-lane, Hearn's-alley, Green's-quay, Taylor's-alley, Buckley's-lane, and Shamble-lane.

The tenement houses, which number about seven, are not in a satisfactory state as regards sanitation, the drainage being defective and cleanliness not sufficiently observed.

A necessity exists for providing healthy dwellings for the working classes in the district.

The district is supplied with water by gravitation from springs and a mountain stream at Boola, about seven miles distant from the town. There is no tillage land or inhabited houses in the catchment area. The supply is derived from a peaty source. The filtration is faulty, as analysis showed the water to be of moderate quality amongst waters of the second class, but fit for drinking purposes.

poses. The supply is abundant for all purposes, and is distributed to all parts of the district, with the exception of some of the lanes in the town. The cost of the supply was £8,600. An improved system of filtration should be adopted.

Sewerage  
and  
drainage.

The sewerage system is defective. In the old parts of the town the sewers are constructed of rubble masonry, and are unsuitable for the water carriage system of excrement disposal. Portions of the district are unsewered. In the new portion of the town (Strand suburb) works in connection with a sewerage scheme for the locality are at present in progress. A loan has also been applied for to construct a main sewer at Devonshire Place. The outfall of the sewerage system in the old portion of the town is into the tideway between high and low water mark. The sewage should be discharged below low water mark. The better class houses are nearly all connected with the sewerage system, but very few of the dwellings of the poorer classes are connected. The sewer traps in many instances are either very badly laid, broken, or defective. Some houses are drained into cesspits which, I am informed, are defectively constructed.

Common  
lodging-  
houses.

The common lodging-houses are not registered, and number about five. They are as a rule fairly well kept, but are not provided with proper sanitary conveniences, drainage, or domestic water supplies.

Slaughter-  
houses.

There are five slaughter-houses in the district, one of which is close to a dwelling-house. They are fairly well constructed and provided with drainage and water supplies, but cleanliness is not sufficiently observed as regards their surroundings, offal and manure being permitted to accumulate in their vicinity.

Excre-  
ment and  
refuse  
disposal.

About one-half of the houses in the district are provided with water-closets or midden privies, the latter being only cleaned out at very long intervals, and kept generally in a filthy state. The sanitary authority do not undertake the domestic scavenging of the district. The excrementitious matter and refuse of all kinds from houses without yards or sanitary conveniences is usually deposited on the streets and removed daily by the street scavenging staff. This practice should be discontinued and arrangements made to provide all such houses with covered receptacles for filth and refuse, which should be emptied daily by the scavenging staff. This would put a stop to the fouling of the streets, and remedy a very dangerous form of nuisance. The products of the street cleansing are removed to the manure depôt, which is close to the river Blackwater, and fairly well isolated.

Dairies,  
cowsheds,  
and  
milkshops.

There are six cowsheds in the district, some of which are defective in construction, ventilation, and air space. The drainage is also unsatisfactory, and cleanliness is not generally observed. Manure is commonly kept in close proximity to the sheds.

Dairies.—There are two dairies in the district, both of which are suitable and kept in a cleanly state.

Milkshops.—There are twelve milkshops in the district, two of which are used solely for the sale of milk and other dairy products, and are kept in a cleanly state. The other ten milkshops are general-dealers' shops and are not so satisfactory.

There are no regulations in force under the Dairies, Cowsheds, and Milkshops Order in the district.

Keeping  
of animals  
on  
premises.

There are about fifty piggeries in the district, the large majority being situate in small confined yards close to dwellings, kept in a filthy condition, and defectively drained, thus giving rise to nuisances and causing a serious danger to the public health of the district.

The Youghal Urban District Council, which consists of twenty-one members, meets regularly once weekly. Orders are made on the reports of the Medical Officer of Health and Sanitary Sub-Officer and enforced when requisite. Very few reports were made by the Sanitary Sub-Officer during the past year to the Medical Officer of Health. He, however, keeps a diary and submits reports at each meeting of the Sanitary Authority. More careful and systematic inspections of the district should be made.

The only available accommodation for patients suffering from any of the various forms of infectious disease is the Workhouse Fever Hospital. This building is quite unsuited for such purpose, being in a dilapidated condition and in a bad situation, adjoining a burial ground. I understand it is in contemplation to provide a new building as an isolation hospital for the Union of Youghal. There is no disinfecting apparatus available. One should be provided at the joint expense of the Youghal Urban and Rural District Councils for the use of their districts. There is a suitable ambulance at the Workhouse, which is available for the conveyance of patients to hospital. The Infectious Disease (Notification) Act, 1889, and Infectious Disease (Prevention) Act, 1890, are not in force in the district.

Bye-laws relating to the following matters have been adopted, but are not yet in force, in the district, viz.:—New buildings; cleansing of footways and pavements; cleansing of privies, ash-pits, &c.; removal of house refuse; sewerage and drainage; common lodging-houses; slaughter-houses; prevention of nuisances, &c.

The matters at present demanding most attention on the part of the Sanitary Authority are as follows:—

- (1.) The provision of healthy dwellings for the working classes and the closing of insanitary dwellings.
- (2.) The proper filtration of the water supply.
- (3.) The remedying of defects in the sewerage system.
- (4.) The improvement of the domestic scavenging of the district, which should be undertaken by the Sanitary Authority, who should also require that all houses be provided with sanitary conveniences.
- (5.) The prevention of the keeping of swine on premises so as to cause nuisances, and of manure in small yards or close to slaughter-houses.
- (6.) The paving and drainage of all yards.
- (7.) The registration and frequent inspection of the common lodging-houses.
- (8.) The adoption of the Infectious Disease (Notification) and (Prevention) Acts.
- (9.) The adoption of regulations under the Dairies, Cowsheds, and Milkshops Order, and the enforcement of same.
- (10.) The provision of a disinfecting apparatus and hospital accommodation.
- (11.) More careful and systematic inspections of the district by the Sanitary Sub-Officer, with a view to the detection and abatement of nuisances.

THOMAS J. BROWNE,  
Medical Inspector.

May, 1901.

# ATHLONE.

## REPORT ON THE SANITARY CIRCUMSTANCES AND ADMINISTRATION OF THE ATHLONE URBAN DISTRICT.

By DR. D. EDGAR FLINN.

Brief  
municipal  
history.

The Athlone urban district, according to the Census of 1901, has a population of 6,618. The town is picturesquely situated on both sides of the River Shannon. It was a parliamentary borough until the year 1885. The Urban District Council consists of eighteen members, nine of whom represent St. Peter's Ward and nine St. Mary's Ward. The total area of the district is 1,299 acres, 1 rood, and 39 perches; Athlone East, on the Leinster side of the river, having an area of 645 acres, 3 roods, and Athlone West (Connaught side) an area of 653 acres, 2 roods, and 39 perches. The total rateable value is £10,752 5s. A considerable income is derived from the rates, the receipts from which average between £5,000 and £6,000 per annum. The number of inhabited houses is 1,257. There are two woollen factories in the town, which afford employment to a large number of persons, both male and female. There are also smaller manufacturing industries. The town is in the centre of a populous district, and is largely availed of for market purposes by the inhabitants in both the counties of Westmeath and Roscommon. Owing to the extensive railway communications, the fairs (both cattle and pig) are yearly growing in importance. A service of river steamers to Killaloe and Carrick-on-Shannon has also tended to improve and develop this district. Athlone is also a military centre. The public lighting is under the immediate control of the Council, and a good revenue is derived from this source, the illuminant being gas.

The navigation of the river at Athlone has also been improved by the Shannon River Commissioners. This has been a source of benefit to the town from a trade point of view.

A Provisional Order was obtained in 1892 for the purpose of acquiring land, &c., for the construction of waterworks. A second Provisional Order was obtained in 1894 for the acquisition and control of the roads within the borough boundary.

The current rates are made up as follows:—

	s.	d.
Poor rate, . . . . .	2	2
Sanitary rate, . . . . .	1	9
Waterworks, . . . . .	2	0
Roads, . . . . .	2	0
Improvement, . . . . .	1	0
Domestic water rate, . . . . .	0	6

Total, . . . . . 9 5 in the £.



Waterworks were constructed at Athlone several years ago, at Water a cost of nearly £10,000, and have proved of great benefit to the supply. town.

The supply is taken by a process of pumping from the River Shannon, at a point about 170 yards north of the railway bridge that spans the river. The water is pumped in from the river to a well, measuring 12 feet in length by 6 feet in breadth, and 10 feet in depth; from thence it passes to two filter beds by means of separate pipes. The filter beds in duplicate have an area of about 300 square yards. The water rises in each filter bed in a circular tower of 5 feet in diameter, and then overflows to another larger circular tower, measuring 27 feet in diameter and 8 feet in depth. This outer tower contains the filtering material, which is as follows:

- 9 inches of coarse gravel;
- 12 inches of coarse sand;
- 6 inches of Polarite, covered with
- 18 inches of Aberdeen fine crushed granite.

After the process of filtration the water passes into settling tanks, 92 feet by 55 feet in diameter. These tanks are capable of filtering 20,000 gallons of water per hour. From the filter beds the water passes to what is termed the "pure water well," and it is then by a process of pumping distributed to the town. A "reservoir tank," capable of holding 240,000 gallons, is situated on what is known as Moran's Hill. This tank, which is about 50 feet above the level of the town, acts as a distributing agent, when the pumping process is not in operation. The allowance per day is estimated at about 23 gallons per head of the population. The filtering materials in use do their work admirably, and great attention and care, I am informed, is bestowed on the filter beds. The waterworks are under the immediate supervision of Mr. P. J. Prendergast, c.e., the Council's Engineer.

The Connaught, or west, side of the town is on the whole fairly well provided with pipe sewers, and provision is made for the flushing of these as well as for their ventilation. There are, however, several streets that still have the old-fashioned built up rubble sewers. The Council has, within the past three years, spent, I am informed, over £1,500 in improving the sewerage in various portions of the urban district. This expenditure was provided for out of the rates, as distinguished from a loan, and has proved of undoubted benefit. Sewerage system.

On the Leinster side of the town the system of pipe sewers has not been quite so general, the old rubble pattern sewer, with paved bottoms and flagged tops, being still much in use. It is, however, in contemplation to improve the whole system on this side of the river, and on the completion of the proposed plan all this important area will be much benefited, and the town as a whole will then have a good and efficient system of sewerage. A map showing the entire system of sewerage and house drainage connections would be desirable.

The public cleansing of the principal thoroughfares is carried out as a rule in an efficient manner. The staff employed consists of ten labourers, who are under the direction of the Surveyor. In addition to scavenging these men when required perform other sanitary work, such as the cleansing of ashpits when necessary, &c. The Council have their own horses and carts. Public and domestic cleansing.

Domestic cleansing is not as a rule carried out under the auspices of the Council. It is, however, undertaken in exceptional cases, where those responsible are unable to pay for the work. A general system of domestic scavenging would be very beneficial from a sanitary point of view. In Athlone there is a large number of houses inhabited by the labouring classes that have no privy or ashpit accommodation. This is the case on the Leinster side as well as the Connaught side of the river. There are also a considerable number of houses that have no back yard accommodation. Where there are no facilities for the removal of domestic refuse, the street bye-lane or court-way becomes the resting-place or dépôt for all description of filth. It cannot be expected that a population will be cleanly in their habits when a large percentage inhabit dwellings that have no sanitary accommodation, and it follows that if the soil near these dwellings is allowed to become impregnated with refuse and filth, which is usually cast out of the houses of the poorer classes, the air must naturally become in process of time vitiated and disease germs are engendered. The continued saturation of the earth in the neighbourhood of dwelling-houses by excrement vegetable refuse and filth causes a serious danger to the public health, and is not unfrequently the cause of outbreaks of infectious disease. There are, I am informed, nearly 400 houses that are unprovided with either privy or ashpit accommodation. Many of these houses are situated in congested areas and in narrow thoroughfares, and the drainage of the back yards of numbers of these dwellings is of an unsatisfactory nature. The yards referred to are mostly unpaved, and allow the soakage of unwholesome debris and filth to pollute the ground.

The "Pail System."

In a town situated as Athlone the frequent removal of all refuse and filth from the congested areas would be very desirable in the interests of the public health, and where there are so many dwellings without privy or ashpit accommodation, the introduction of the house "*pail system*" and *daily removal of refuse* would certainly be an advantage. The Council would do well to consider the advisability of adopting such a system, and in order to test its efficacy it might be introduced as a trial into a section of the town where it would be most required, or in a locality where there exists a large number of houses without privy or ashpit accommodation. The collection and removal of domestic refuse is an important aid to the health of a town, and more particularly is this the case when the poorer householders have no alternative but to deposit rubbish on the ground near their dwellings. The absence of privy and ashpit accommodation from so many of the poorer houses is a strong reason why the Council should initiate a system of domestic scavenging and cleansing, and on the other hand, where there is ample space to provide privy and ashpit accommodation, these necessary sanitary requirements should also be carried out.

Refuse disposal.

The carting of all kinds of street and house rubbish and vegetable matters to the nearest available waste or dumping ground is a method of disposal of refuse which has many dangers, prominent amongst which is the danger that particles of clothing, food, &c., that may have been in contact with patients suffering from an infectious disease, may find its way into the street refuse heap, and ultimately to the dumping ground. The burning of refuse matter prevents the possibility of such a contingency, and the "Refuse destructors" now in use in many places are designed with a view to

destroy all such dangerous elements, and the prompt destruction of large masses of all kinds of refuse by burning is undoubtedly a benefit to the health of a population. A "refuse destructor" would prove of incalculable benefit in a town such as Athlone.

A considerable proportion of the dwellings inhabited by the poorer classes are to be found in comparatively small and limited areas. Many of these areas are situated quite close to the main thoroughfares. In a majority of instances the houses are small and not in good repair, and a number of them have no back yard accommodation. Houses with no back yard accommodation are to be met with in Scotch-parade, Lloyd's-lane, Pipe and Cemetery-lanes, Canal Banks, Little Hell, Preaching-lane, Moynan's-lane, Black-road, &c. Such houses lack the most essential element conducive to health, and are always a standing menace to the health of any town.

The housing of the working classes.

The Council have had under consideration a scheme for the erection of artisans' dwellings. A local inquiry was held some time since, but owing to some informalities the scheme was not proceeded with. The Council are, however, about to proceed with another scheme, I understand, which it is hoped will be brought to a successful issue. Proper dwellings for the artisan classes are much required in Athlone. There is a considerable wage-earning community in the town, and a cheap and comfortable class of house, with the necessary sanitary requirements and accommodation, would prove a great boon.

Bye-laws have been adopted under the Public Health Acts. The common lodging-houses as such are not as yet registered, but I am informed they are regularly inspected. Such houses should be duly registered. There is always a great danger of overcrowding, more particularly as there is frequently a large influx of people to the town during market and fair times.

Bye-laws under the Public Health Acts.

Regulations have been adopted by the Council for the management of dairies, cowsheds, and milkshops. These regulations came into force on January 1st, 1901. The enforcement of the regulations is very important, and those dealing with the ventilation, cubic space, and drainage of cow byres, should be strictly carried out. The frequent removal of manure from dairy yards should also be insisted on. Accumulations of manure ought not to be permitted to remain in the immediate vicinity of cowsheds and dairy yards from which milk is supplied to the general public.

Dairies, cowsheds, and milkshops.

There are nine slaughter-houses in the urban district. They are not registered, but are regularly inspected. One or two of the slaughter-houses are in much too close proximity to dwelling-houses, while in others the drainage requires improvement. A public abattoir of moderate dimensions and in a convenient centre would, from a sanitary point of view, be very desirable.

Slaughter-houses.

The Infectious Disease (Notification) Act, 1889, is in force in the District since December, 1893.

The Executive Sanitary Officer is Mr. P. V. C. Murtagh, who is also Clerk to the Urban Council as well as Law Agent.

(Adoptive Act) Sanitary Staff.

There are two Medical Officers of Health, viz.:—Dr. C. J. MacCormack and Dr. M. Shanley. The former is Medical Officer for the eastern, or Leinster, portion of the town, and the latter for the western, or Connaught, side. Both the Medical Officers of Health keep themselves fully acquainted with the sanitary condition of their respective districts, and furnish occasional reports to the Council.

The Office of Town Surveyor is held by Mr. P. J. Prendergast, C.E., who appears to perform the many duties required of him with efficiency and satisfaction.

The Sanitary Sub-Officer is Mr. L. O'Flynn, who has only held the office for a short period, but who is apparently anxious to carry out the duties of his office in a satisfactory manner.

I desire, in concluding this report, to express my thanks to the Executive Sanitary Officer, Mr. P. V. C. Murtagh, for the information and assistance he was good enough to give me. I also wish to thank Mr. Prendergast, C.E., Town Surveyor, who likewise facilitated me during the course of my inquiries.

D. EDGAR FLINN,  
Medical Inspector.

November, 1901.

## CLONMEL.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE CLONMEL URBAN  
DISTRICT.

By Dr. T. J. BROWNE.

Clonmel urban district is situate partly in Tipperary South Riding. The district is intersected by the River Suir. The urban district comprises an area of 1,306 acres. Before the extension of the boundaries of the district four years ago, the area was only 331 acres. The added area is chiefly pasture lands. The population of the district is 10,163 according to the Census of the present year. The number of inhabited houses is 1,902. The rateable valuation of the district is £19,209, and the rates levied for all purposes amount to 5s. 3d. in the pound. The Corporation have landed property comprising 4,800 Irish acres. The borough receipts for 1900 amounted to £16,391, and expenditure for same period, exclusive of gas, £11,864. The debt amounts to £54,405. The principal industries are brewing, tanning, flour-milling, a condensed milk factory, two creameries, and a margarine manufactory. Bi-weekly markets and monthly fairs are held in the town for the sale of horses, cattle, sheep, pigs, &c., and are largely patronised by buyers. The sub-soil in the low-lying parts of the district is a rich calcareous loam, and in the more elevated parts of the district, limestone or clay slate.

The water supply of the district is obtained by gravitation from a mountain stream, about four miles distant on the south-eastern side of the town. The stream has its origin from springs on the mountain side. The catchment area comprises 17,000 acres. There is no cultivated land within the catchment area. The supply is abundant, allowing of twenty-five gallons per head, per day, and analyses prove it to be of excellent quality. The water is conveyed in 9-inch pipes to all parts of the town and district. There are fourteen fountains distributed over the district for supplying the public, and 920 houses are provided with domestic water supplies. The cost of the water supply amounted to £18,000.

There are seventeen miles of streets and roads in the district and about six miles of sewers. The streets are all sewered. The sewers are defective and for the most part are constructed of rubble masonry, permitting of percolation into the surrounding sub-soil, and sometimes becoming choked. The sewers provided within recent years are constructed of glazed earthenware pipes and are properly trapped and ventilated. The ventilation and flushing of the old sewers is imperfect. Some houses are drained direct into the River Suir, but as a rule the houses are connected with the sewers, which discharge into the River Suir at various points in its course through the town.

The better class houses are fairly well circumstanced as regards sanitation, construction, &c. The houses occupied by the working

classes, comprising about 600, are generally two-storied buildings, having four rooms in each. The ground floors are concreted and a few are earthen. They are all slated, and with the exception of about 100, are in a fairly good state of repair. The houses have back yards and sanitary conveniences generally, and are drained, but those in the low-lying parts of the town are damp. There are fifty-seven tenement dwellings in the district, some of which are overcrowded. The worst class of houses are in the Old Bridge district, which is part of the added area.

The Sanitary Authority have provided thirty-three dwellings under the Housing of the Working Classes Act, at a cost of £5,000. There are about eighty-five vacant houses in the district, about fifty of which number are workmen's houses.

Excrement and refuse disposal.

The occupiers of houses are responsible for the domestic scavenging, the Sanitary Authority not undertaking this duty. The ash-pits and privies are as a rule cleaned out quarterly, the contents being disposed of to the farmers in the neighbourhood. This work is on the whole fairly well carried out, except in the case of the very poor, who have not facilities for disposing of the refuse, &c.

The excrement is disposed of on the water carriage system in about a third of the total number of houses, and by midden privies in the remainder.

The street scavenging is done by the Sanitary Authority, and the sweepings, &c., removed to the manure depôt on Davis-road, which is well isolated.

Dairies, cowsheds, and milkshops.

There are about fourteen cowsheds and dairies in the district. They are for the most part unsuitable, being defective in construction, ventilation, and drainage. Manure is permitted to accumulate in their vicinity and cleanliness is not properly observed.

There are no milk shops in the district.

Slaughter-houses.

There are ten slaughter-houses in the district, none of which conform to the bye-laws as regards construction, drainage, and distance from occupied dwellings. They are, however, as a rule kept in a cleanly state.

Common lodging-houses.

There are seven common lodging-houses registered in the district. They are clean and well kept and regularly inspected.

Keeping of animals on premises.

Pigs are very generally kept on premises situate too close to dwelling-houses, and nuisances arise from the filthy conditions and defective drainage of the piggeries.

Sanitary Administration.

The Clonmel Urban District Council meet regularly monthly, and the Public Health Committee fortnightly, for the transaction of public health business. The sanitary staff consists of the Executive Sanitary Officer, Mr. O'Brien; a Consulting Sanitary Officer, Dr. Philip O'Flynn; a Medical Officer of Health, Dr. Kennefick; and a Borough Surveyor and Sanitary Sub-Officer, Mr. Brunnicardi. The various officers discharge their duties efficiently.

Since August, 1899, the Medical Officer of Health furnished 332 reports to the Council, and makes regular inspections of the district. The Sanitary Sub-Officer furnished 135 reports to the Medical Officer of Health during the past year, and reports to each meeting of the Council. During the same period 315 notices were served, requiring the abatement of nuisances or for sanitary requirements, 163 of which were complied with. There was one prosecution under the Public Health Act and eight under the Sale of Food and Drugs Act.

The bye-laws under the Public Health Act are enforced, except as regards slaughter-houses and the keeping of animals on premises. There is a suitable ambulance at the Fever Hospital for the conveyance of patients suffering from infectious disease to hospital, and the Fever Hospital in connection with the Union workhouse is available for the reception and treatment of such patients. There is also a disinfecting apparatus available at the Fever Hospital, which is fairly efficient.

The matters which require the special attention of the Sanitary Authority are as follows:—

Recommendations.

- (1.) The provision of a proper system of sewerage for the district.
- (2.) The remedying of sanitary defects in the dwellings of the working classes, and the prevention of overcrowding in tenement dwellings.
- (3.) The undertaking by the Sanitary Authority of the domestic scavenging of the district, at least as far as the poorer localities are concerned.
- (4.) The adoption of regulations under the Dairies, Cowsheds, and Milkshops Order, and the regular inspection of such places.
- (5.) The enforcement of the bye-laws, particularly as regards slaughter-houses and the keeping of animals on premises.
- (6.) The substitution of water-closets for midden privies where possible.

THOMAS J. BROWNE,  
Medical Inspector.

November, 1901.

## BALLYSHANNON.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF BALLYSHANNON.

By Dr. BRENDAN MACCARTHY.

- Situation of town.** On the 26th February and 1st March, I visited the town of Ballyshannon, which is situated on the River Erne, close to its mouth. The town is divided into two portions by the river, that on the north being the larger, and containing most of the better-class and more modern houses. Here the principal streets are steep, and run towards the river. On the other side, the streets follow the line of the river for the most part.
- Water supply.** The town is supplied by water from Ardpatton Lake, which is about three miles distant on the Donegal-road. Thence it is conveyed by gravitation in pipes to a reservoir about one mile from the town, from which it is carried in mains to Ballyshannon. Pipes are laid to the better-class houses, but the majority draw their water from stand-pipes in the streets. The water is of good quality, but lately there has been some scarcity, owing to a fall of some four feet in the level of the water at Ardpatton Lake. The cause of this is at present under investigation.
- Sewers.** The sewers are chiefly old flagged drains, into which the sewage from the houses having water-closets is conducted. Some of the houses have privy accommodation, but, I should say, the majority have no sanitary conveniences of any kind. No provision is made for the removal of night soil, or for the cleansing of privies.
- Dwellings.** There are a large number of houses of the very poorest and worst description, consisting of one or two rooms. They are low, badly-lighted, and ill-ventilated, without any back-door or approach, and often not lighted at the back. The whole of Back-street on both sides is without any rear approach. Here the yard space is small, but, small as it is, it is generally utilised for the keeping of cattle, either temporarily by jobbers, or for dairy cattle. In one instance, three or four dairy cows are kept in a small yard, which is roofed over, the only entrance to which is through the house. The yard is badly paved and filthy; a large manure heap occupied a considerable part of the available space. When this is removed, it has to be taken through the dwelling-house. A similar state of things was found a few doors off. On the opposite side of the street are some houses, with small yards containing shanties for cattle. At the back of the yards is a waste piece of ground, in which each house has its manure heap. This waste ground is shut in by walls, and was strewn with rubbish of all sorts, discarded pots and pans, old hoots, and fragments of cast-off clothing. It was almost covered with stagnant water. The water was prevented from running off



by the walls on the further and lower sides. The latter wall was the boundary of the yards of some small houses running at right angles to Back-street, and the water from the space which I have described oozed through the wall into one of the yards, in which was a well, the water of which is used for drinking. The waste space, to which I have referred above, is used as a privy by the occupiers of the houses in Back-street, as they have no sanitary conveniences of any kind.

Perhaps the worst premises I saw were also in Back-street. Here the narrow yard is used for slaughtering. The animals are bled into straw, which is then stored as manure. An enormous heap of this material occupied a great part of the available space. The whole place was filthy with blood and manure, and quite unsuited for use as a slaughter-yard. I have no doubt it is a source of danger to the public health. Insanitary premises.

Along the backs of the houses on both sides of Back-street are surface drains, which are badly constructed and liable to obstruction where they run under walls, or sometimes portions of the dwelling-houses. On the other side of the river, at East Rock, are some houses, consisting of one room. The houses are built against a steep declivity, that might be called a cliff. The approach to them is most uneven, being difficult to walk on, and dirty. There are no sanitary conveniences of any kind. The houses nearer to the river than these have cramped and dirty backyards, with manure heaps.

It would be of great importance that the houses in Back-street and others should be provided with a means of access at the back. A vegetable garden bounded by a high wall extends along the backs of those on the north side of Back-street, so that it would seem the difficulty here is not great. Recommendations.

By a rigid enforcement of cleanliness and a systematic removal of filth and manure, by obliging owners of houses, as far as reasonable, to keep their premises in proper condition, by not permitting cattle to be kept in unsuitable conditions, and by insisting that proper sanitary conveniences are provided, much improvement could be effected.

There is only one Sanitary Sub-Officer for the dispensary districts of Ballyshannon and Ballintra, which large area includes the important towns of Ballyshannon and Bundoran.

BRENDAN MACCARTHY,  
Medical Inspector.

March, 1901.

## BUNDORAN.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF BUNDORAN.

By Dr. BRENDAN MACCARTHY.

Situation  
of town.

On the 28th February, I visited the town of Bundoran, which is situated on the Donegal coast, about two miles south of the mouth of the Erne, and about four miles from Ballyshannon. It had a population of 764 in the year 1891. It is visited during the summer by large numbers of people for sea-bathing, when its population cannot be less than 4,000, whilst the Sunday or "week-end" visitors are about as many more.

The town consists mainly of one street, about two miles long, following the line of the shore. There are a number of houses of the better class, and hotels, which in the season are crowded with visitors, on which the prosperity of the town largely depends. Almost all the houses indeed depend on this source of income. New houses are in course of erection, and the town is improving. The Northern Counties Hotel stands about a quarter of a mile from the town. It has a water supply and drainage system of its own.

Water  
supply.

The water supply of Bundoran is obtained from the mountains of Kinelough, and is carried in mains by gravitation a distance of about seven miles to a reservoir (in the town) which is calculated to contain a supply sufficient for the requirements of the town for five days. This reservoir also has the effect of diminishing the pressure, which otherwise would be too great, and the overflow discharges into a stream at the north end of the town. The water is of good quality, and about £5,000 was, I believe, expended on the works.

## Sewers;

There is an old flagged sewer running the length of the main street. Near the bridge over the Bradoge River an earthenware sewer pipe has been laid, which is connected with the flagged sewer, and discharges into the stream just at the sea side of the bridge. Further up the Bradoge several other earthenware piped sewers discharge. Amongst these are the sewers of the Convent, the railway station sewer, and the sewers from the priest's house, and a new row of houses just being completed on the south side of the river. The flow of water in summer is not sufficient to carry away offensive matter, and a serious nuisance is thus caused by deposits in the bed of the stream and on the foreshore. The Bradoge opens on to the shore, close to one of the bathing places. The sewerage of the houses on the sea side of the main street, north of the bridge, requires attention, and it would be in the best interest of Bundoran that the necessary expenditure should be incurred in remedying the existing defects in the system.

There is no provision made for the cleansing of privies, and many of them are in a very neglected and uncleanly condition. Many of the houses are without sanitary conveniences of any sort, and on account, partly of the slope of the land, and, in a greater measure, of blocked and badly-constructed drains, the back premises and yards of many houses, on the side of the main street remote from the sea, are in an exceedingly wet, dirty, and insanitary condition. This condition is, in not a few instances, made worse by the keeping of cattle in badly-constructed out-houses, and by collections of manure. In several instances I saw unprotected wells, the water of which is sometimes used for drinking purposes. It would be well to have the water in such cases analysed.

Refuse disposal.

In one which I inspected, the floor was defective and uneven. There was no channel, but the washings mixed with blood flowed out of the back door into the garden, causing, in warm weather, I understand, an unpleasant smell, to which the Medical Officer of Health has already drawn attention.

Slaughter-houses.

The Ballyshannon No. 1 Rural District Council is the Sanitary Authority.

Sanitary administration.

The Medical Officer is Dr. Hamilton, of Ballyshannon.

There is one Sanitary Sub-Officer for the Ballyshannon and Ballylintra dispensary districts.

The only hospital accommodation available is that provided at Ballyshannon Union Infirmary and Fever Hospital, and is, I believe, sufficient. There are two ambulances, one used exclusively for infectious cases, and the other for non-infectious cases.

Hospital accommodation.

No bye-laws have been adopted, neither are the Infectious Disease (Notification) Act, 1889, nor the Infectious Disease (Prevention) Act, 1890, in force in the district.

Bye-laws and regulations.

Footpaths are needed in some places, while in other places, where they have been made, they present a neglected appearance. The street channels are defective, and on the occasion of my visit the streets required cleansing. Many houses are without eaveshoots, or down pipes.

General remarks.

There is much need for improvement in the drainage of the town. It would be well, I think, if some general scheme for the improvement of the sewerage of the town were adopted, and steps taken to have all existing or new sewers connected with the main sewers. Under the existing arrangement new sewers are made independently, without any attention being given to the requirements of the town as a whole. In order to abate the nuisance caused by the condition of the Bradoge in summer time, I think it would be well for the District Council to obtain an engineer's opinion as to whether a main sewer pipe might be laid, with which all existing sewers, discharging therein, should be connected. The pipe might possibly be carried far enough out to free the bathing place from unpleasantness. An intercepting sewer to join this might also be laid along the backs of the houses north of the bridge, to take away the sewage from these houses. The cost of the water supply presses heavily on Bundoran, but these suggested sewers would not, I

Recommendations.

think, involve a very large outlay, and as this summer resort is growing, a more complete scheme might be devised, and proceeded with as occasion offers. There is, as stated, only one Sanitary Sub-Officer for the whole of the Ballyshannon and Ballintra dispensary districts. In view of the importance of the town of Bundoran, I consider it would be well if a suitable man were appointed, who would constantly see to the cleansing of privies, the removal of manure, and report any cases of concealed infectious disease.

BRENDAN MACCARTHY.

Medical Inspector.

March, 1901.

## BANDON.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF THE TOWN OF BANDON.

By Dr. T. J. BROWNE.

The town of Bandon is situate on the Rivers Bandon and Bridewell, General description. about twenty miles to the west of Cork City, and in the baronies of East and West Carberry, and parishes of Kilbrogan and Ballymodan. The town forms part of the Bandon Rural District, the administration of the Public Health Acts being vested in the Rural District Council. The lighting, cleansing, and watching of the town is vested in Commissioners under the Towns Improvement Act. The area of the township is 126 acres, and the rateable value of property, £7,409. The rates levied in the past year by the County Council amounted to £1,667, and by the Town Commissioners, £359. The population of the town, according to the Census of 1891, was 3,488, and in 1871 the population was 6,131, showing a decrease of nearly one-half in twenty years. The number of occupied houses is 611. Weekly markets and monthly fairs are held; also two special horse fairs in the year. A brewery, distillery, creamery, and mills afford industrial employment.

About one-half the houses in the township are occupied by the poorer class of the population. Dwellings. The majority of these houses are of a fairly good class. A small proportion are dilapidated and insanitary, defective in construction, ventilation, lighting, drainage, and cleanliness. The worst class of houses are to be found in Church-street, Gallows-hill, Higgins-lane, Cork-road, and Stanton's-lane. There are about forty tenement houses, one family occupying two rooms. With few exceptions, the houses have backyards, but in many instances the yards are unpaved and undrained, and are unprovided with back entrances, so that the ashes, manure, &c., have to be removed through the dwellings. There is a general absence of sanitary conveniences in connection with the poorer class of houses, and in some instances swine are kept in small confined yards, giving rise to nuisances. The better-class houses are fairly well circumstanced as regards sanitation.

The water supply is piped from Farranlough reservoir, which is Water supply about six miles distant from the town. The gathering ground from which the water supply is derived extends from the reservoir at Farranlough for a distance of a mile in a westerly direction, towards Newcestown village. There are several springs in the catchment area, the water from which uniting, forms a stream which flows

through fields, which are chiefly pasture, to the reservoir. Some of the land is tilled, and there are twelve houses in the catchment area. There is a possibility of pollution from these sources, particularly during periods of heavy rainfalls; also from cattle, &c., having access to the stream. The water is, however, filtered, and the quality is said to be good. The supply is sufficient for all purposes. Most of the better-class houses are provided with domestic supplies. Stand pipes are distributed over the town for the accommodation of the poorer classes.

Sewerage  
and  
drainage.

Portions of the town are unsewered, viz., Foxes-street, Castle-row, Shannon-street (portion of), Boyle-street (portion of), Watergate (portion of), Cork-road (portion of), Convent-hill, Kilbrogan-street, and Stanton's-lane. The sewers in other parts of the town are constructed of rubble masonry, and discharge into the Bandon River in its course through the district. The houses in the Main-street are drained direct into the river. The trapping and ventilation of the sewers are imperfect. The houses and yards are, generally speaking, not connected with the public sewers. The yards connected with the poorer class of houses are, for the most part, drained by surface channels from yard to yard. The sewerage system in the town of Bandon is defective, and I understand the Sanitary Authority contemplate providing several new sewers, and generally improving the sewerage system of the district. There is no map of the system of sewers.

Excre-  
ment and  
refuse  
disposal.

The better-class houses are provided with water-closets and midden privies. Some of the poorer-class houses have midden privies also, but the general method of excrement disposal in the poorer class of houses is by depositing it on manure heaps, which are to be found in most of the yards. These manure heaps are only removed when considerable quantities accumulate, and have, in many instances, to be removed through the dwelling-houses, there being no back entrances to the yards. Where no yards exist, the ashes and other refuse is deposited on the public streets, which are scavenged daily. The Sanitary Authority do not undertake the domestic scavenging, the occupiers being responsible for the performance of this work, which is, in many instances, very unsatisfactorily carried out.

Slaughter-  
houses.

There are three regular slaughter-houses in the town, all of which are fairly well circumstanced as regards construction, drainage, &c., but in the case of two of these slaughter-houses, manure and piggeries are kept in their vicinity. In one instance slaughtering is carried out in the dwelling-houses.

Common  
lodging-  
houses.

There are two registered common lodging-houses in the town, neither of which is suitable, having no yards or sanitary conveniences. They are kept in a filthy state, and are occasionally overcrowded.

Dairies,  
cowsheds,  
and  
milkshops.

There are no dairies, properly speaking, in the town, the milk being sent direct to the customers or creamery, and the milking utensils being kept in the dwelling-houses. There are three cowsheds in the town, all of which are defective in construction and drainage. The sheds are close to dwelling-houses, and are not kept in a cleanly state. Manure in considerable quantities is permitted to accumulate close to sheds. No regulations are in force under the Dairies, Cowsheds, and Milkshops' Order. There are no milkshops in the district.

Keeping of  
animals.

In addition to the cowsheds, there are about forty piggeries in the town, nearly all of which are in confined yards, close to dwellings, badly drained, and badly kept, giving rise to nuisances.

The Workhouse Fever Hospital, which provides accommodation for about eighty patients, and is well equipped in every respect, is available for the treatment of patients suffering from the various forms of infectious disease. There is a suitable ambulance for the conveyance of patients to hospital, but there is no disinfecting apparatus.

Hospital  
for  
infectious  
diseases.

The Bandon Rural District Council, the Sanitary Authority, meet regularly each week. The necessary Orders are made on the reports of the Medical Officer of Health and Sanitary Sub-Officer, and enforced when requisite. During the past year the Medical Officer of Health furnished sixty-seven reports, and the Sanitary Sub-Officer a similar number. Sixty notices for the abatement of nuisances were served, and the notices complied with. The Infectious Disease (Notification) Act and Infectious Disease (Prevention) Acts are in force in the district.

Sanitary  
adminis-  
tration.

There are no bye-laws under the Public Health Acts in force in the district, nor have regulations as to dairies, cowsheds, and milkshops been adopted.

The matters which most particularly call for the attention of the Sanitary Authority are as follows:—

Recom-  
menda-  
tions.

- (1.) Improvement in the housing of the working classes, and the remedying of insanitary dwellings.
- (2.) The provision of a good and sufficient sewerage system for the town, with which all yards and premises should be connected so as to permit of proper drainage.
- (3.) The abatement of nuisances caused by the keeping of animals on premises.
- (4.) The provision of sanitary conveniences in connection with houses.
- (5.) Prohibiting the keeping of manure in unsuitable yards and a better system of domestic scavenging.
- (6.) Bye-laws for the regulation of common lodging-houses should be adopted, and regulations made under the Dairies, Cowsheds, and Milkshops' Order, and enforced.

THOMAS J. BROWNE,  
Medical Inspector.

February, 1901.

## KANTURK.

REPORT ON THE SANITARY CIRCUMSTANCES AND  
ADMINISTRATION OF KANTURK.

By Dr. T. J. BROWNE.

General  
description.

The town of Kanturk is situate partially in the townlands of Curragh, Kanturk, and Greenane, in the Kanturk rural district, and county of Cork. The Rivers Allow and Dallun, tributaries of the Blackwater, unite about the centre of the town. The area covered by the town is about thirty acres, and the population, at the Census of 1891, was 1,800, including the inmates of the Workhouse. The valuation is £3,000. The rates levied amount to 5s. in the pound for all purposes. The labouring class comprise about half the population, the other half comprising the professional, mercantile, and trading classes. Kanturk is the centre of a large agricultural district. Weekly markets and monthly fairs are held in the town. The only industrial employment is given at a creamery and a corn mill. Nearly all the householders are owners in fee of their houses and premises, having some few years ago purchased the landlord's interest.

Dwellings.

The shopkeepers, traders, and better class generally occupy fairly good houses, with yards and gardens attached. About thirty per cent. of the poorer class are badly housed, the houses being defective in construction, ventilation, and lighting, and unprovided with sanitary conveniences. The yards attached to the houses are small, unpaved, and undrained. In some instances, pigs are kept in these yards giving rise to nuisances. Collections of manure and filth are commonly to be found in the yards, and domestic cleanliness is not observed.

Water  
supply.

The water supply is obtained from three public pumps, situate in Percival-street, Earl-street, and Strand-street; there are also two surface wells, one in Kathleen-lane and the other at Greenane, and about twelve private pumps, situate in the yards attached to certain houses. The surroundings of the public pump in Strand-street are of a very objectionable nature, the surface of the ground being very uneven, with lodgments of stagnant water and filth scattered about, some of which must percolate into the well. The water from this well has been reported on unfavourably by the analyst, and several cases of enteric fever have recently occurred amongst persons using the water from this pump. Some of the private pumps, from their situation and surroundings, must be liable to pollution, and some recent cases of enteric fever were said to be due to the use of water obtained therefrom. Analysis proved the water to be contaminated. The water supply runs short during periods of drought, and is on the whole unsatisfactory. A supply from an outside source should, if possible, be procured.



All the main streets are sewered, except Bluepool. The sewers are constructed of rubble masonry, and discharge into the river in its passage through the town. There is no map of the system of sewers. The ventilation and trapping of the sewers is defective, and the only means of flushing them is by storm water. The sewers frequently become choked through want of proper trapping and flushing. The better-class houses and yards attached are connected with the sewers, but very few of the yards attached to the poorer class of houses are connected, these yards being drained by a surface channel running from yard to yard, and which is always in a very filthy state.

There are only a few water-closets in the town, owing to the want of means of flushing. The excrement is disposed of in some instances by means of midden privies, which are cleaned out at irregular intervals, but the majority of houses have no sanitary conveniences, the excrement and other refuse being thrown on the manure heaps in the yards or other convenient places. The refuse, &c., is not generally removed from the yards until a large quantity accumulates, when it is sold to the farmers in the neighbourhood, or utilised for manuring gardens.

There are four slaughter-houses in the town, all of which are too close to dwellings, and defectively drained—two being structurally bad.

There are four registered common lodging-houses in the town, only one of which could be considered fairly suitable for the purpose. None of them are provided with sanitary conveniences.

Regulations respecting dairies, cowsheds, and milkshops have not been adopted by the Sanitary Authority. The Sanitary Sub-Officer acts as Inspector of Dairies, &c. There are no dairies, properly speaking, in the town, the milk being sent direct to the customers or the creamery, and the milking utensils kept in the dwelling-houses.

Milk is sold in two shops in the town, the shopkeepers being general dealers.

There are ten registered cowsheds in the town, and, with the exception of two, all are structurally defective. They are situate in close confined yards; the drainage is defective, and large quantities of manure are allowed to accumulate close to the sheds, which are usually kept in a very filthy state.

These are not kept in a satisfactory way, the surface of some being very uneven, badly scavenged, and drained. Filth of all descriptions, manure, &c., is allowed to accumulate on some of the back passages. A scavenger should be employed to keep the roads, not under contract, in a cleanly state.

The Kanturk Rural District Council is the Sanitary Authority for the town of Kanturk, which is not under Municipal Government. The Sanitary Authority meets regularly each fortnight. Orders are made on the reports of the Medical Officer of Health, and enforced when requisite. During the past year the Medical Officer of Health furnished seventy-two reports to the Sanitary Authority and the Sanitary Sub-Officer made 104 reports. Both officers seem to discharge their duties efficiently.

The Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890, are in force in the district.

There are no bye-laws under the Public Health Acts in force in the district.

Hospital  
accommoda-  
tion for  
infectious  
diseases.

There is accommodation for forty patients in the Workhouse Fever Hospital. Two trained nurses are at present employed. There is a suitable ambulance for the conveyance of patients suffering from diseases of an infectious nature to hospital, but there is no disinfecting apparatus. An efficient one should be provided without delay, as several outbreaks of enteric fever have occurred in the district within recent years, and at present there are some patients suffering from the disease in hospital. The expenses connected with the destruction of articles of bedding, clothing, &c., would be saved to the ratepayers if a proper disinfecting apparatus were provided.

Recom-  
menda-  
tions.

The matters which demand the early attention of the Sanitary Authority are as follows:—

- (1.) The provision of a gravitation water supply for the town of Kanturk, and the protection of the existing sources of supply from pollution.
- (2.) The improvement of the sewerage system, the connection of all yards and premises with the sewers, and the provision of proper traps and ventilators for the sewers.
- (3.) Requiring the insanitary dwellings in the town of Kanturk to be put in a sanitary state.
- (4.) The prevention of nuisances arising from defective domestic scavenging; the keeping of animals on premises; accumulations of manure in yards, &c.
- (5.) The scavenging of the roadways, laneways, passages, &c.
- (6.) Bye-laws for the regulation of common lodging-houses should be adopted and enforced.
- (7.) Regulations respecting dairies, cowsheds, and milkshops should be framed and put in force in the district.

THOMAS J. BROWNE,  
Medical Inspector.

January, 1901.

# HOWTH.

## REPORT ON THE SANITARY CIRCUMSTANCES AND ADMINISTRATION OF HOWTH.

By Dr. D. EDGAR FLINN.

Howth is situated about nine miles to the north-east of the city of Dublin. It forms a part of the North Dublin rural district, and its sanitary administration is vested in the North Dublin Rural District Council. The population is considerably increased during the summer months, and as a seaside resort it enjoys a large amount of patronage. Sanitary history.

The population of Howth and Sutton combined, according to the last Census (1891), is 2,174, and the population of the town of Howth proper is 1,060.

The number of inhabited houses is 419, distributed as follows:—

Town of Howth,	.	.	.	.	377
Howth Demesne,	.	.	.	.	42
					<hr/>
Total,	.	.	.	.	419

To this number may be added 143 inhabited houses in the following townlands:—

Sutton North,	.	.	.	.	10
Sutton South,	.	.	.	.	27
Burrow,	.	.	.	.	81
Quarry,	.	.	.	.	15
Censure,	.	.	.	.	10
					<hr/>
Total,	.	.	.	.	143

The area comprises 2,690 acres.

The town (which is situated at the foot of the promontory known as "The Hill of Howth") possesses many natural advantages, which are to an extent counterbalanced by the fact that within a comparatively small area, and in the best part of the town, dwellings of an inferior class are crowded together, and are devoid of any proper sanitary accommodation. The very indifferent state of the drainage is also not conducive to the interests of this district.

It would appear that diphtheria has been more or less prevalent in Howth since June, 1900. The former Medical Officer of Health mentioned a case as having occurred in February, 1900, but Outbreak of diphtheria.

apparently the first case duly notified was that occurring in June of last year. A second case was notified on July 19th to Dr. Greene, who at that time was Medical Officer of Health of the district. No further cases were notified until September, but several occurred during that month. In October, Dr. O'Donoghue, who had been appointed Medical Officer in succession to Dr. Greene, reported that eighteen cases of diphtheria, so far as he had been able to ascertain, had occurred between June 6th and October 23rd; from the latter date up to the present fifteen cases have been notified.

Owing to the protracted illness of the former Medical Officer, active preventive measures were not taken as vigorously as they might have been, but latterly energetic measures have been carried out by the present Medical Officer of Health, and it is probable that the outbreak may now decline. The schools were closed from September 26th to November 12th, when they were re-opened. Two fresh cases of diphtheria were, however, soon after reported, and the schools, on the advice of the Medical Officer, Dr. O'Donoghue, were again closed from November 27th to December 8th. The schools have since remained open, except during the period allowed as Christmas holidays. It is regrettable that in the earlier portion of the outbreak children attending the schools from infected houses were not excluded from the schools, for it is probable that the spread of the disease was in a measure due to personal contact, in the schools, of children residing in infected premises, where no precautionary measures were adopted. In the earlier stages of the outbreak the process of disinfection appears to have been carried out in the most careless and perfunctory fashion, and none of the clothing or bedding (until recently) was removed for the purposes of disinfection. The Sanitary Sub-Officer has not by any means discharged his duties in a satisfactory manner; in fact, he does not apparently understand or properly realise what are the duties of a Sanitary Sub-Officer. In an important district such as Howth the services of an intelligent, watchful, and active Sanitary Sub-Officer are very desirable. The continuance of the outbreak of diphtheria is in a great part attributable to the fact that in the earlier stages of the outbreak no really active measures were taken as to the isolation and removal of patients to hospital, or the proper disinfection of houses, bedding, or clothing.

Since the 26th of January four cases have been notified of diphtheria as having occurred in the Main-street, Howth, and one at Sutton. One of the cases, which proved fatal, occurred in a crowded tenement house, where another case had occurred some few months previously, and from where the bedding and clothing had not been removed to the disinfecting chamber for disinfecting purposes. There is a great danger of a further recrudescence of the disease, as, no doubt, there may be houses where infected bedding and clothing yet remain. In the tenement house above mentioned there were several children attending school.

All the more recent cases that have occurred have been, however, promptly isolated and removed to hospital. Disinfection has been carried out by the Disinfecting Department of the Corporation of Dublin, and the clothing and bedding removed to the disinfecting chamber at Marrowbone-lane.

The conditions under which the labouring and working classes of Howth (largely composed of fishermen) live could not be more unfavourable; it is no exaggeration to say that these conditions could not be much worse. Housing of the labouring classes.

The cottage dwellings, which have nearly all thatched roofs, are very old and dilapidated (many of them containing only one room), are wretchedly lighted and do not permit of sufficient air space. A considerable number have no backyard or privy accommodation whatever; the floors of the houses are all defective; where there are small backyards, they are kept in a filthy condition, and accumulations of refuse matter (both organic and vegetable) crowd up the limited space available. Overcrowding of these small dwellings occurs in a large degree. This condition obtains more especially where there is only one general living room; even where there is a sleeping room attached there is overcrowding in many instances. The absence of privy and ashpit accommodation also aggravates the unhealthy conditions under which the majority of the poorer classes live.

In Church-street, Main-street, Fish-street, Slaughterhouse-lane, &c., there are a considerable number of small cottages without any backyard or privy accommodation. In "The Haggard" there are eleven dwellings with the very minimum of backyard accommodation, the majority of them being also in a very dirty and insanitary condition.

Examples of overcrowding that came under my notice may be cited as follows:—In one instance I found a family consisting of thirteen persons, ten of whom slept in one room, the dimensions of which were about fifteen feet square; in another case a family of eight persons occupied one sleeping room, the dimensions of which were thirteen feet by seven feet, and in this instance there was no backyard to the house; in a third case there were eleven in family in one small-roomed cottage without any backyard accommodation.

I entered several houses where the average was six in family, with one sleeping room, and without any backyards. All such dwellings must be regarded as absolutely unfit for human habitation, in view of the need of sufficient air space, adequate ventilation, or the most ordinary living accommodation—not to speak of the requirements of decency as regards the separation of the sexes.

A number of these insanitary dwellings are huddled together in the very best quarter of the town of Howth, and were originally erected on an insufficient area, while in some instances they are built quite up to the frontage of an earthen bank, where there could be no possible provision made for backyard accommodation or adequate ventilation.

The present arrangements for the disposal of sewage and drainage in Howth are also in a most unsatisfactory condition, and constitute a grave danger to the public health. A very considerable quantity of the sewage matter from the town finds its way directly into the harbour. There are no less than five points of discharge into the harbour, quite close to the public road; a serious nuisance arises in consequence, more especially at low water, and when the tide has receded. A good deal of sewage matter is also discharged into Balcadden Bay, where there are four points of discharge, some of them being most objectionally close to a public bathing place. Sewerage and drainage.

Practically all the surface drainage, mixed with liquid domestic filth, discharges on to the open street, slop water and vegetable refuse are also thrown into the surface channels, and at certain times

a most offensive odour arises in consequence. The absence of proper surface drainage is a distinct menace to the health of the town.

There are a large number of houses of a residential and villa character on the Hill of Howth, the number of which is increasing. The drainage from these houses finds its way into cesspools constructed at some distance from the dwellinghouses. These cesspools are emptied at certain intervals. A proportion of the house drainage from this area also finds its way into a small tributary stream which flows into Balcaddan Bay. Another stream, arising on the Hill of Howth, passes through the town, and receives in its course the drainage of a considerable number of houses, as well as the overflow from many cesspools. When the population of the town is temporarily increased, as is the case during the summer and autumn months, the pollution of this stream, as well as the whole question of sewerage, becomes a very serious matter.

Water  
supply.

The supply of drinking water is derived from public pump wells—about ten in number—the majority of them being surface wells. There are one or two open surface wells which are very liable to pollution. In the very centre of the town (in Main-street) there is an open or dipping-well, immediately adjoining dwellinghouses, which is extremely liable to pollution; it is situated near the public footpath, and without any protection whatever from contamination. This well should be closed, or measures taken to protect it, and convert it into a covered pump-well; its very close proximity to dwellinghouses, which are all thickly inhabited, renders it a danger to the public health, from its liability to contamination: the more prudent course would be to close the well. The waters from all the public pump-wells have, at my suggestion, been analysed. These wells are more or less shallow, while in many instances they are situate within a comparatively thickly inhabited area, and are thus very liable to pollution.

Not one of the samples examined comes up to the standard of a first-class drinking water, and some are described as of an inferior quality—in quite a number there is an excess of both albuminoid and saline ammonia—two elements of a suspicious and dangerous nature. Taken as a whole, the public water supply cannot be regarded as satisfactory, and the Council will be well advised to approach the consideration of this important question as early as possible.

Public  
cleansing.

The public cleansing and scavenging of the main thoroughfares are not satisfactorily carried out. The absence of privy and ashpit accommodation induces the occupiers of the small cottages and cabins to cast filth and domestic rubbish on to the streets. Where there are backyards they are kept in a most insanitary condition, and accumulations of vegetable and house refuse, manure, &c., are apparently stored for very lengthened periods without being removed. This storage of organic and vegetable matter in the rear of small and overcrowded dwellings is fraught with great danger to the public health and should not be tolerated.

Slaughter-  
houses.

There are two slaughterhouses in the town. One of them, situate in Slaughterhouse-lane, is much too near inhabited dwellings, while the yard, which appears common to several houses, is kept in a very insanitary and filthy state. The second slaughterhouse is in a better situation. The immediate surroundings of both slaughterhouses require improvement, and might be kept much cleaner; one of them stands very much in need of a water supply.

I visited the principal cowsheds in Howth, and found them, as a whole, in a fairly good sanitary condition. The Sanitary Authority should insist on a systematic removal of manure from such premises at short intervals.

Medical Officer of Health, Dr. O'Donoghue, Howth; Sanitary Sub-Officer, Mr. John Keating, Howth.

The Rural District Council should take steps and be guided by expert engineering advice, as to the provision of a proper system of sewerage for the town of Howth. This is a question that requires to be dealt with, and demands the earnest attention of the Council. The outbreak of diphtheria draws special attention to the need that exists at Howth for a properly devised plan of sewerage and drainage. The poisonous decomposition of organic matter, when not promptly removed and dealt with, is a strong factor in the dissemination of diphtheria, as well as other kindred diseases, and there can be no doubt that a proper system of sewerage is very much required in Howth, in order that liquid refuse from dwellinghouses may be got rid of without causing nuisance, and thus endangering the health of the population.

The provision of healthy dwellings for the labouring class of the inhabitants is also urgently needed, accompanied, *pari passu*, by a strict enforcement of the law as to the closing of houses that have been condemned as unfit for human habitation; and in view of the overcrowding that at present exists, the question will require to be vigorously grappled with. The Guardians erected some dwellings a few years ago, which are commodious and healthy; the erection of similar additional dwellings would tend to relieve the congestion existing at present.

An improvement in the system of public and domestic cleansing is also required in Howth, and the more frequent removal of filth accumulations from the backyards of the small cabin dwellings is very necessary. With this view, a house to house inspection should be made at frequent and regular intervals. The provision of privies and ashpits, where practicable, should also be insisted upon. There has been a great lack of energetic supervision over the backyards, and accumulations of manure and house filth have been allowed to remain unremoved for much too long a period. The cowsheds, dairies, and slaughter-houses also require more constant supervision and inspection.

The question of the provision of a disinfecting chamber might also be considered by the Council. From the point of view of economy, as well as its undoubted utility and necessity, the erection of a disinfecting apparatus is desirable. The prompt removal and disinfection of clothing and bedding from infected houses is a preventive measure that requires the most careful attention, and the work is one which should be carried out under the immediate supervision and control of the officers of the Sanitary Authority.

A water supply from without the inhabited area is also a question that must sooner or later be dealt with by the Council, and, having regard to the very great importance of establishing and maintaining the great sanitary reputation of a bathing and health resort like Howth, it is most strongly recommended that an estimate should be obtained of the cost of a sufficient supply of good water. Similarly,

the Council should ascertain the probable cost of any sewerage works that may be considered necessary. In view of the re-appearance of diphtheria in the Main-street, which is the most populous area in Howth, and where one of the schools is situated, it seems advisable, in the interests of the public health, and in order to prevent a further extension of the outbreak, that the schools should be temporarily closed, and thoroughly disinfected, and that steps should be taken to prevent children from infected houses attending school for a considerable period. The Council might consider the action of the Sanitary Sub-Officer in regard to the manner in which he has discharged his duties during the outbreak, and also as to his capacity and fitness for the important duties devolving on a Sanitary Sub-Officer.

D. EDGAR FLINN.

Medical Inspector.

March, 1901.



## DUBLIN.

# REPORT ON THE PRECAUTIONARY MEASURES TAKEN AGAINST THE INTRODUCTION OF PLAGUE AT DUBLIN.

By DR. D. EDGAR FLINN.

The "Dublin Port and Sanitary Authority" is a Joint Board, constituted by Provisional Order dated 23rd May, 1900, confirmed by Parliament, and consists of twenty-two members, elected by the respective constituent authorities as follows :—

- Fourteen by the Corporation of Dublin.
- Two by the North Dublin Rural District Council.
- \*One by the Clontarf Urban District Council.
- Two by the Pembroke Urban District Council.
- One by the Blackrock Urban District Council.
- Two by the Kingstown Urban District Council.

The limits of jurisdiction extend "to the whole of that part of the Customs Port of Dublin which lies between the point on the sea coast on the north where the North Dublin rural district terminates its northern extremity, and the point on the sea coast on the south, where the Kingstown urban district terminates at its southern extremity, together with the waters of the said port of Dublin within such limits," &c.

All expenses which may be incurred by the Port Sanitary Authority are defrayed out of a common fund to be contributed by the constituent authorities in proportion to the rateable value of the property in the district of each such authority, such value to be ascertained according to the valuation lists in force for the time being.

From inquiries which I have made, I learn that vessels arrive in the port of Dublin from the following ports :—

*Foreign.*—Rouen, Bordeaux, Hamburg, New York, New Orleans, San Francisco, Huelva, Cadiz, Malaga, St. John, N.B.; Antwerp, Baltimore, Charente, Gottenburg, Montreal, Quebec, Havre, Riga, Nantes, Oporto, Miramichi, Dunkirk, Sfax, Königsberg, Pensacola, Archangel, Bremen, Christians, Buenos Ayres, Adelaide, Batoum, Dalhousie, Nova Scotia, Portland (Oregon), Parana, Chatham, N.B.; Wallaroo.

\*Clontarf urban district now forms part of the county borough of Dublin.

*Home.*—Glasgow (daily), Liverpool (daily), Hull, London, Falmouth, Plymouth, Southampton, Bristol, Newport, Cardiff, Llanelly, Chester, Holyhead (daily), Ardrossan, Ayr, Morecambe, Newcastle, Sunderland, Yarmouth, Ipswich, Irvine, Swansea, Rochester, Manchester, Silloth, Workington, Whitehaven, Waterford, Wexford, Belfast, Londonderry, Limerick, Runcorn, Bridgewater, Cork, and Maryport.

Character  
of trade.

*Imports.*—Beer, wine, spirits, sugar, paper, saltpetre, starch, flour, seeds, margarine, machinery, iron ware, glass ware, timber, oil (mineral), maize, oats, wheat, tea, brooms, agricultural implements, barley, oil cake, oatmeal, furniture, cotton, seed meal.

*Exports.*—Porter, linen, whiskey, live stock (horses, pigs, cattle), glass, chemical manure, tobacco, and wool.

*Coastwise.*—Passengers and general merchandise.

Inland  
water  
communi-  
cation.

The Royal Canal and the Grand Canal, on the north and south sides of the city, form channels of communication with the interior of the country.

Lines of  
railway.

Great Northern Railway.  
Great Southern and Western Railway.  
Midland Great Western Railway.  
Dublin, Wicklow, and Wexford Railway.

Port  
medical  
officer.

The Port Medical Officer of Health is Sir Charles A. Cameron, C.B., M.D., F.R.C.S.L., Public Health Office, Cork-hill, Dublin.

During the recent threatened invasion of plague the following medical men were appointed to inspect all vessels arriving at the port of Dublin from Glasgow, or other infected port, viz.:—Dr. Burne (who, previous to the constitution of the new Dublin Port Sanitary Authority, acted as Medical Officer of Health under the provisions of the Board's regulations as to cholera, yellow fever, and plague), Dr. Burgess, Dr. Oulton, and Dr. White. The duties were very efficiently carried out.

Port  
sanitary  
sub-  
officers.

There are no Port Sanitary Sub-Officers. An important port, such as Dublin is, should have special Sanitary Sub-Officers, whose duties would be to inspect vessels of all kinds touching or trading with the port, foreign or home. A regular and systematic inspection of the shipping is very necessary and important, and should demand the early attention of the Port Sanitary Authority.

Arrange-  
ments for  
inspection  
of vessels.

The officials detaining vessels communicate with the Port Medical Officer of Health through the Custom House officer.

The boarding station is at the extreme end of North Wall. The Customs' officers are always on duty, and vessels are hailed and boarded as they come up the river off this point.

The mooring station has been fixed in the Alexandra Basin, and is marked by a yellow buoy. Its situation is about 120 yards to the north of the boarding station.

The Port Medical Officer of Health examines all persons on board an "infected" vessel, or a vessel from an "infected port."

Persons suspected to be suffering from plague would be removed to the intercepting hospital ship, which is situated in the Alexandra Basin, near the extreme point of the North Wall. It contains twelve beds, is in charge of a caretaker, and is kept in readiness for any emergency that might arise. The Port Sanitary Authority provides an ambulance boat for the conveyance of patients. This hospital ship cannot be regarded as a satisfactory place for treating cases of plague or other seaborne cases of infectious diseases, neither is it suitable or adapted for the purposes of a hospital, nor does it possess the comforts and conveniences incidental to a properly-equipped hospital, and, further, the removal of patients to it must be fraught with considerable risk. The Port Sanitary Authority should take into earnest consideration the important question of making better provision for the accommodation of seaborne cases of infectious disease.

During the recent threatened invasion of plague Beneavin Convalescent Hospital, about three miles distant from Dublin, was acquired temporarily. This hospital contains twenty-four beds; has a nursing staff, and is fully equipped. Arrangements were also in contemplation for the erection of temporary huts in case of necessity.

Cork-street Fever Hospital would also be available in the event of an outbreak assuming serious proportions. Arrangements were also entered into with the authorities of Cork-street Fever Hospital and the Victoria Jubilee Nursing Association, for obtaining the services of a proper nursing staff for the hospital ship.

The entire question of adequate and proper hospital accommodation for the treatment of seaborne cases, or otherwise, of infectious disease, is one demanding the close and early attention of the Sanitary Authorities responsible both for the port and city of Dublin. In the event of a crisis, the existing arrangements are not as satisfactory as they might be.

A reception house for the observation and detention of persons coming from an infected area was opened at Nicholas-street. Four cases were detained at the reception house of persons who came from the infected area at Glasgow.

There is an excellent steam disinfecting apparatus situated at Marrowbone-lane, which would be available.

There is no mortuary specially provided by the Port Sanitary Authority.

The water tanks of all vessels arriving from infected ports are emptied and cleaned out, and fresh drinking water is supplied.

The Port Medical Officer of Health always directs that all bilge water shall be pumped out from vessels coming from an infected port.

Active preventive measures were taken by the Public Health Committee of the Corporation, as regards the city of Dublin. Public and domestic cleansing, more especially the backyards of tenement houses, earnestly engaged the attention of the sanitary officials. A vigorous inspection of the tenement rooms and common lodging-houses was also carried out, and the more frequent removal of filth and manure heaps from dairy yards and slaughterhouses was enforced. An additional number of Sanitary Sub-Officers was also appointed.

The Medical Officers attended in turn all the incoming vessels and steamers from Glasgow, during the continuance of the outbreak

Destruction  
of  
rats

of plague at that port, and the passengers were subjected to examination.

A preventive measure of great and undoubted importance, viz., the destruction of rats, is one that should be carefully considered by the Sanitary Authority in charge of the port of Dublin.

Cases of plague have quite recently appeared at both Hull and Cardiff. In the latter port a fatal case of plague occurred in the vicinity of the docks, in January, 1901, and it has been established beyond doubt that the infection was imported by rats, or that they were the intermediary agents of infection. Rats had been dying in large numbers at Cardiff, and it has been shown that the patient who died was brought into intimate contact with them, it having been part of his work to collect and destroy the carcasses of the dead rats. The bacteriological examination revealed the fact that both the man and the rat had died of plague.

The rat, as it is now ascertained, is subject to plague, and in most epidemics the plague bacillus has been found in the bodies of the rats, and the mortality amongst them has been high. Some scientists claim that it is the vermin that inhabit the coast of the rat that convey the infection to man. It has further been shown that vermin harbour the plague bacillus, and leave the rat's body soon after it dies; and that the body parasites of man, such as lice and fleas, in common with flies, also absorb the plague bacillus. It is thus obvious that there exists a considerable danger of the introduction of plague by the action of rats coming on vessels from infected ports, and gaining access to warehouses and dwellings. The Port Sanitary Authority should take into consideration the best means of dealing with this question, as it is one which has attracted very great attention.

Sanitary  
inspection.

The Port Sanitary Authority might request the Public Health Committee of the Corporation of Dublin to cause a thorough inspection to be made of all the streets, laneways, dwellinghouses, and common lodging-houses in the immediate vicinity of the northern and southern line of quays. This inspection should be carefully and systematically done, and reports should be frequently furnished as to the sanitary condition of these localities, which more readily afford an avenue for the introduction and propagation of the infection, but unremitting and sustained attention should be given in regard to the sanitary condition of the city of Dublin as a whole.

It must be remembered that there have been three centres of plague infection in Great Britain during the past year, viz., Glasgow, Hull, and Cardiff, and there remains the danger of the possible recrudescence of the disease.

#### KINGSTOWN.

Kingstown Urban District Council is one of the constituent authorities forming the Dublin Port Sanitary Authority.

Inspection  
of vessels.

The boarding station has hitherto been at a point outside of the entrance to the harbour, in the open Bay of Dublin.

There has hitherto been no definite mooring station fixed, but the mooring station at the Alexandra Basin, North Wall, and which is marked by a yellow buoy, would now be available.

The Port Medical Officer of Health would examine all persons on board an "infected" vessel, or a vessel coming from an "infected port."

There is a disinfecting apparatus at Kingstown, which would, no doubt, be available. Disinfection.

There is daily passenger communication (morning and evening) between Kingstown and Holyhead, and a considerable number of coasting vessels—particularly coal vessels—arrive at Kingstown, from English, Scotch, and Welsh ports. Occasionally foreign vessels touch at this port under stress of weather. Ports whence ships arrive

It would be advisable for the Port Sanitary Authority to take into consideration the propriety of appointing a medical practitioner, residing in Kingstown, to act as Local or Assistant Port Medical Officer of Health, and whose services could be immediately available in any case of sudden emergency.

#### HOWTH.

Howth is also under the jurisdiction of the Dublin Port Sanitary Authority for port purposes. It has practically very little communication by sea with other places. An occasional coasting vessel touches at Howth.

D. EDGAR FLINN,

Medical Inspector.

January, 1901.

# REPORT ON THE PRECAUTIONARY MEASURES TAKEN AGAINST THE INTRODUCTION OF PLAGUE AT THE SEVERAL PORTS (OTHER THAN DUBLIN) IN THE PROVINCE OF LEINSTER.

By Dr. D. EDGAR FLINN.

The seaport towns in the province of Leinster, where there might be a possibility of the introduction of seaborne cases of plague are the following:—

Dublin. (See separate Report).

Greenore, Carlingford, Dundalk, Drogheda, Balbriggan, Skerries, Howth (included in Dublin Port Sanitary Authority), Malahide.

Kingstown (included in Dublin Port Sanitary Authority), Bray, Wicklow, Arklow, Wexford, New Ross.

## GREENORE AND CARLINGFORD.

The administration of Greenore and Carlingford for port sanitary purposes is included in the port of Newry.

The Dundalk Rural District Council is one of the Sanitary Authorities whose district forms part of or abuts on the port of Newry, and would contribute towards the expenses that might be incurred by the Port Sanitary Authority.

Dr. Finegan, Carlingford, is Port Medical Officer of Health.

**Trade.** *Coastwise*:—There is daily communication between Greenore and Holyhead by steamer.

*Exports*:—From Greenore—Cattle, sheep, pigs, provisions.

*Imports*:—Coal from Ayr, Ardrossan.

*Exports*:—From Carlingford—Nil.

*Imports*:—Coal from Scotch ports.

There was no mooring station fixed at date of inspection.

## DUNDALK.

Port Sanitary Authority.—Dundalk Rural District Council.

**Appor-** All expenses which may be incurred by the Port Sanitary Authority  
**tisement** will be defrayed out of a common fund, to be contributed by the  
**of ex-** Sanitary Authorities whose districts form part of, or abut on, the  
**penses,** port of Dundalk, viz:—

Dundalk Rural District Council.

Dundalk Urban District Council.

Ardee No. 1 Rural District Council.

**Trade.** *Coastwise*:—Glasgow, Ardrossan, Liverpool.  
The foreign vessels arriving are very few.

*Exports*:—Cattle, sheep, pigs, whiskey, porter, provisions, agricultural produce, tobacco.

*Imports*:—Timber, corn, coal, flour, woollens, iron.

Goods are also conveyed to and from Dundalk by the Great Northern Railway Company.

Dr. J. C. Sellars, Dundalk, is the Port Medical Officer of Health.

The Port Sanitary Authority's hospital is situated at Soldier's Point, about one mile distant from the town; is excellently situated, and stands in an isolated position. It is capable of accommodating thirty patients. A nursing staff would be immediately provided if the occasion required, and the building could be fully equipped in a few hours.

There is a steam disinfecting apparatus (recently erected) attached to the Union, and it would be available.

The Infectious Disease (Notification) Act, 1889, has not been adopted.

Disinfection.

Notification of Infectious Diseases.

The coastguards board all vessels near Giles-quay, which is the boarding station for the port of Dundalk. Customs' officers subsequently take charge.

Inspection of vessels.

Mooring station is situated at the "Rock Hole," and is three-quarters of a mile from Soldier's Point.

The Custom House officer would communicate by messenger with the Port Medical Officer of Health.

The efficiency of the administration is, on the whole, good. It would be well, however, in view of a sudden emergency arising, if the Port Sanitary Authority provided a few iron bedsteads at the Intercepting Hospital. During the winter months the building should also be kept aired by occasional fires.

## DROGHEDA.

The port of Drogheda extends from Dunany Point to Delvin River.

The following are the Sanitary Authorities whose districts form part of, or abut on, the port:—

Ardee No. 1 Rural District Council.

Louth Rural District Council.

The Mayor, Aldermen, and Burgesses of Drogheda acting by the Council.

Drogheda No. 2 Rural District Council.

All expenses which may be incurred by the Port Sanitary Authority will be defrayed out of a common fund to be contributed by the Sanitary Authorities named.

Appropriation of expenses.

The ports with which this district has most trade, or is in most frequent communication, are Liverpool, Glasgow. There is almost daily communication with Liverpool and Glasgow, and a considerable passenger traffic at certain seasons of the year. The export trade principally consists of cattle, meal, provisions, linen, &c. The import trade includes coal, timber, flour, &c.

Port  
medical  
officer of  
health.

Inter-  
cepting  
hospital.

Disinfect-  
ing appa-  
ratus.

Mortuary.

Infectious  
Disease  
(Notifica-  
tion) Act.

Inspection  
of vessels.

The Great Northern Railway Company also conveys goods to and from the port.

William J. O'Keeffe, L.R.C.S.I., L.R.C.P.I., Duleek, who is also Medical Officer of the Duleek dispensary district.

The Port Sanitary Authority's hospital is situated at Baltray. It is capable of accommodating six patients. It is well isolated, and in a convenient situation, near the entrance to the River Boyne, and is distant about two miles from Drogheda. The building has hitherto served as a lifeboat house, and has been temporarily acquired, and equipped by the Sanitary Authority.

The Sanitary Authority has not provided a disinfecting apparatus. An important area such as this should have the proper means of carrying out disinfection.

There is no mortuary.

This Act has not been adopted by the Sanitary Authority.

The coastguards at present make the necessary arrangements for the boarding of vessels near the entrance to the River Boyne.

There was no definite mooring station fixed at the date of inspection.

The Custom House officer would communicate by messenger with the Port Medical Officer of Health.

The Port Medical Officer of Health has in the past and will in the future inspect all vessels "infected," or coming from an infected port.

The sanitary administration is, on the whole, fairly well carried out. The Medical Officer's residence is not as central for administrative purposes as it should be, and in a case of emergency this is most undesirable, and might prove a serious matter.

## BALBRIGGAN.

Balbriggan forms part of the Customs' Port of Dublin.

Balrothery Rural District Council is the Port Sanitary Authority.

Dr. F. B. Nowlan, Balbriggan, is the Port Medical Officer of Health.

Inter-  
cepting  
hospital.

There is no Intercepting Hospital at Balbriggan, but the Hospital Hut at Skerries, about four miles distant, would be utilised in case of emergency.

Disinfect-  
ion.

There is a disinfecting apparatus at the Balrothery Union Workhouse.

Boarding  
station.

No boarding or mooring station has yet been fixed.

Trade.

*Imports*:—Coals, salt.

*Exports*:—Linen, hosiery.

Coasting vessels, principally from Scotch ports.



## SKERRIES.

Skerries forms part of the Customs' Port of Dublin.

Balrothery Rural District Council is the Port Sanitary Authority.

Dr. Healy, Skerries, is the Port Medical Officer of Health.

There is an Intercepting Hospital Hut at Skerries, capable of intercepting hospital, accommodating six persons, and could be fully equipped at very short notice. It is the property of the Balrothery Union. Two beds are always ready for any emergency that might arise. The Hospital hut is in charge of a resident caretaker.

The Infectious Disease (Notification) Act, and the Infectious Disease (Prevention) Act are not in force in the Balrothery Union.

There is a disinfecting apparatus at the Balrothery Union Workhouse.

There was no special boarding or mooring station fixed at the date of inspection. The coastguards have hitherto usually boarded vessels at entrance to harbour.

Coasting vessels and colliers principally from Scotch and Welsh Trade ports.

## MALAHIDE.

Malahide forms part of the Customs' Port of Dublin.

Balrothery Rural District Council is the Port Sanitary Authority.

Dr. P. Kiernan, Malahide, is the Port Medical Officer of Health.

There is no Intercepting Hospital at Malahide.

The trading communication is very small. An occasional coal vessel arrives.

## BRAY.

Bray is included in the Customs' Port of Dublin.

Dr. Raverty, Bray, is the Port Medical Officer of Health.

There is no Intercepting Hospital at Bray. The Rathdown Union Fever Hospital at Loughlinstown would be available in case of emergency. In the event of plague occurring, it was proposed to erect temporary huts or tents in a convenient situation near the sea border.

No boarding or mooring station had been fixed at the date of inspection.

There is a disinfecting apparatus at the Union. The Bray Urban District Council also contemplate erecting a disinfecting apparatus.

**Infectious Disease (Notification) Act.** This Act has been adopted, and is in force in the district.

**Trade.** There is trading communication with English and Scotch ports, principally for coal, slate, and limestone. Exports—Timber and grain.

## WICKLOW.

Wicklow forms part of the Customs' Port of Dublin.

Rathdrum Rural District Council is the Port Sanitary Authority.

Dr. Halpin, Wicklow, is the Port Medical Officer of Health.

**Intercepting hospital.** There is no Intercepting Hospital. There is a Fever Hospital, capable of accommodating twenty patients, situated in the town, and would be available, if required.

**Trade.** There is trading communication with Scotch ports, principally for coal.

**Inspection of vessels.** Vessels are boarded by coastguards at the entrance to the harbour.

No mooring station had been fixed at the date of inspection.

**Disinfection.** There is no disinfecting apparatus.

**Infectious Disease (Notification) Act.** The Infectious Disease (Notification) Act has been adopted in the Rathdrum rural district. The Wicklow urban district has not adopted this Act.

## ARKLOW.

Arklow is included in the Customs' Port of Dublin.

Rathdrum Rural District Council is the Port Sanitary Authority.

**Intercepting hospital.** There is no Intercepting Hospital. There is, however, a Fever Hospital, managed by a local committee, situated in the town, and capable of accommodating twelve patients.

**Trade.** There is some trading communication with Scotch and other ports, principally for coal.

Dr. Gardiner, Arklow, is the Port Medical Officer of Health. This Medical Officer has recently resigned his position as Medical Officer of the Rathdrum Union.

**Inspection of vessels.** The coastguards board vessels near the Arklow Bar.

There was no mooring station fixed at the date of inspection.

**Disinfection.** There is no disinfecting apparatus.

**Infectious Disease (Notification) Act.** This Act has recently been adopted in the Rathdrum Rural district.

## PORT OF WEXFORD.

The port of Wexford extends from Courtown Harbour (including Courtown Harbour) to Baginbun Point. Limits of jurisdiction.

The Sanitary Authorities whose districts form part of or abut on the port are:—

- Gorey Rural District Council.
- Enniscorthy Rural District Council.
- Wexford Rural District Council.
- The Mayor, Aldermen, and Burgesses of Wexford acting by the Council.
- New Ross No. 1 Rural District Council.

All expenses which may be incurred will be defrayed out of a common fund, to be contributed by the Sanitary Authorities named. Apportionment of expenses.

*Coastwise*:—Liverpool, Bristol, and Glasgow (occasionally). Trade.

*Exports*:—Cattle, sheep, pigs, and provisions.

*Imports*:—Coal, timber.

The Infectious Disease (Notification) Act has not been adopted. Infectious Disease (Notification) Act.

Dublin, Wicklow, and Wexford Railway.

Dr. Pierce, Wexford, who is also Medical Officer of Health for the Wexford urban district, is the Port Medical Officer of Health. Line of railway.

There is no Intercepting Hospital at Wexford. The question of a site for the erection of a temporary structure has been under consideration. The town Fever Hospital would be available in case of an emergency. Intercepting hospital.

There is no disinfecting apparatus. Disinfection.

The coastguards would apprise the Custom House officer, and a special messenger would be sent to the Port Medical Officer of Health. Inspection of vessels.

The boarding station is near the Wexford Bar at Islandside, about three miles from Wexford. Boarding Station.

There was no mooring station fixed at the date of inspection.

## NEW ROSS.

The port of New Ross extends from Baginbun Point to St. Mullin's, on the River Barrow. Limits of jurisdiction.

The Sanitary Authorities whose districts form part of or abut on the port are:—

- New Ross Rural District Council.
- New Ross Urban District Council.
- Idrone Rural District Council.
- Thomastown Rural District Council.
- Ida Rural District Council.
- Waterford No. 2 Rural District Council.

Inter-  
cepting  
hospital.

There is an excellent hospital at Passage, which would be available as an Intercepting Hospital for New Ross. There is also a hospital at Campile, which would be available in case of necessity.

The Port Medical Officer is Dr. Stephenson, Dunmore, who has hitherto acted in that capacity.

Trade.

There is a considerable trade with English and Scotch ports.

*Imports*:—Coal.

*Exports*:—Grain, flour, provisions.

Vessels of small tonnage can proceed beyond New Ross by the Rivers Nore and Barrow, to the interior of the country.

Infectious  
Disease  
(Notifica-  
tion) Act.  
Boarding  
station.

This Act has not been adopted in the New Ross Rural district.

Boarding station is situated at Passage, where all vessels for both Waterford and New Ross have hitherto been inspected.

D. EDGAR FLINN,

Medical Inspector.

October, 1900.

# REPORT ON THE PRECAUTIONARY MEASURES TAKEN AGAINST THE INTRODUCTION OF PLAGUE AT PORTS IN ULSTER, BETWEEN CARLINGFORD LOUGH AND PORTRUSH.

By Dr. C. J. CLIBBORN.

The coast-line of the district under my charge as Medical Inspector extends from Portrush, in the County Antrim, to Warrenpoint, county Down. Extent of district.

There are two head ports in this district, viz:—Belfast and Newry. Belfast head port extends from Glendun River to St. John's Point. Newry head port from St. John's Point to Cooley's Point.

The different Sanitary Authorities whose districts form part of, or abut on, the ports or harbours are as follows:—

In head port of Belfast:—Portrush urban district, Ballycastle rural district, Larne rural district, Larne urban district, Belfast Port Sanitary Authority, Newtownards rural district, and portion of Downpatrick rural district.

In head port of Newry:—Portion of Downpatrick rural district, Kilkeel rural district, Newry, Nos. 1 and 2 rural districts, Warrenpoint urban district, and portion of Dundalk rural district. This portion of Dundalk rural district is not in my district as Inspector, but is connected with Newry port. Portrush urban district, though in Coleraine port, is portion of my district as Inspector. So I thought it well to report on precautions taken by Sanitary Authorities in whose districts these harbours are situated, though probably your Inspectors, Drs. Edgar Flinn and Coey Bigger, have also done so.

## BELFAST.

The principal foreign trade is with Ghent, Rotterdam, Hamburg, Baltic ports, Canada, and the United States of America. The cargoes consist of nearly every class of goods. A few vessels arrive from Canada and Norway with timber only. The number of arrivals in 1899 was 444 (including trade at Larne), while fifty-three vessels took cargoes to foreign ports, chiefly raw cotton, imported from America to the Baltic. Nature and extent of trade of port.

Coasting trade:—Several lines of steamers run daily between here and Great Britain, carrying general cargo and passengers. The other vessels arriving here from Great Britain chiefly bring coal.

There is trade also with Derry, Dundalk, and Dublin in general cargoes.

There is coastwise trade to Ardglass, Ballycastle, Bangor, Carrickfergus, Cushendall, Donaghadee, Glenarm, Killough, Magheramorne, Portaferry, Portavogie, Strangford, and Whiteabbey. Coal is imported from Great Britain.

General cargo is also shipped at Belfast to places on Strangford Lough.

The passenger traffic is very large, especially between Belfast, Fleetwood, Liverpool, and Stranraer.

The total number of vessels arriving coastwise in the Belfast Customs' district with cargo during October was 789; of these sixty-three came from Irish ports.

The number of vessels taking cargo outwards was 530, fifty-five of these going to Irish ports.

**Medical inspection of vessels.** In addition to Dr. Coates, Port Medical Officer, four Assistant Medical Officers have been appointed for the purpose of inspecting all vessels arriving in Belfast Lough from city of Glasgow, or any vessel on which sickness was reported or suspected.

Names and addresses of these officers are as follows:—

Dr. Ferguson, York-street, Belfast; Dr. Irvine, Albert Bridge-road, Belfast; Dr. Bolton, Bangor; Dr. Killen, Carrickfergus. There are two Sanitary Sub-Officers engaged in making a sanitary inspection of all such vessels.

The chief Port Medical Officer, Dr. Coates, has the names and addresses of six Sanitary Sub-Officers, who can be called upon to assist him at any hour in case of emergency.

**Arrangements in the city.** Six additional Sanitary Sub-Officers have been appointed, who will be engaged in cleansing and disinfecting any infected premises, interring the dead, &c., &c.

The ordinary Sanitary Sub-Officers are at present engaged in having all the houses in the old courts and lanes in the city cleansed and whitewashed, and the Street Inspectors' Department is having the surface of these old courts and lanes flushed, cleansed, and disinfected.

The Public Health Offices are practically open day and night, and officers are always in attendance, so as to proceed to any case immediately it is notified.

**Quarantine stations.** These are fixed at Falls Roads and Whitehouse Roads.

**Isolation house.** Some little distance, about one mile from Intercepting Hospitals, and distant from any dwellinghouse, there is a good building, in fair order, which, in case of necessity, could be used for this purpose. This house is the property of the county borough council. Some objection was raised by Improvement Committee, who formerly had use of these premises, but both Dr. Browne, Medical Inspector, and myself inspected this house, and we were satisfied it would, in case of emergency, be suitable. No other premises could be obtained.

**Hospital arrangements.** Arrangements have been made with Belfast Board of Guardians to have medical officers, nurses, bedding, and medical appliances ready, so that intercepting hospitals can be put into full working order at two hours' notice.

Guardians provide a really good ambulance, and an additional one can be obtained if required.

**Disinfection.** Belfast County Borough have an arrangement with Belfast Guardians that they can obtain use of their steam disinfecter, which is one of the best modern type.

Carbolic vapour is also used.

**Destruction of rats.** Rats on board vessels and adjoining quays have been trapped and destroyed, Belfast Port Sanitary Authority having obtained services of a professional trapper from Birmingham for this purpose.

**Intercepting hospital.** The Intercepting Hospital is situated at Twin Island, which is some distance outside the city, and away from any inhabited houses. Patients can be landed from ships at a small pier erected by Port Sanitary Authority, and there is a fairly good road made for conveyance of any patients from the city. This hospital has room for

at least fifteen patients. It has lately been repaired, painted, and put into good order. A supply of water from the city main is laid on, and there are rooms for nurses and resident medical officer in a separate building.

A new hospital, from Messrs. Hempriz and Son, has also been erected, adjoining first-mentioned hospital, and is capable of affording accommodation to fifteen additional patients.

These two hospitals will probably be quite sufficient for accommodation of any cases occurring within district, or imported from abroad.

A mortuary is also attached to these hospitals.

Arrangements made by Belfast Port Sanitary Authority are, I think, most satisfactory.

### BALLYCASTLE RURAL DISTRICT.

The only harbours in this district are Ballycastle, Red Bay, and Church Bay on Rathlin Island. The trade is principally importation of coal, and export of iron ore. Nature and extent of trade of port.

The principal ports with which trade is carried on are Glasgow and other Scotch ports.

Dr. M'Ilroy, of Ballycastle, inspected vessels coming from Glasgow to Ballycastle or Rathlin Island, and Dr. Fogarty, of Cushendall, performed same duty at Red Bay. Medical inspection of vessels.

Customs and coastguards in this and every case give every assistance in their power.

Red Bay only suitable mooring ground. Vessels coming to Ballycastle or Rathlin Island could not be moored with any safety outside Ballycastle Harbour. Quarantine or mooring station.

I do not think an Intercepting Hospital is required here. Work-house, Fever Hospital would provide sufficient accommodation for any cases that might occur in this district. Isolation hospital.

The present ambulance is not, I think, one in which patients can be moved with safety and comfort. Guardians would do well to provide an ambulance more up to date. Conveyance of patients to hospital, nursing.

With regard to nursing there is the present hospital staff, but if any cases occurred, Medical Officer was ordered to at once obtain additional nurses from Belfast.

Disinfecting apparatus consists of an air-tight chamber in which sulphur is burned; it is of little or no practical use. District Council would do well to obtain a modern steam disinfecter, or order destruction of all infected bedding and clothing. Disinfection.

Nothing done in this matter, but this is not a serious question here. Destruction of rats.

### LARNE RURAL DISTRICT.

This port has foreign trade with Norway and Sweden, chief imports being timber and wood pulp; trade with Great Britain, chief imports being coal and general cargo, and it also ships iron ore to Great Britain. There is a small coasting trade done with Glenarm, Carnlough, and Falkourie; coal also is imported from these places. The chief ports in Great Britain with which trading is carried on are—Glasgow, Ayr, Troon, Whitehaven, and Maryport. Nature and extent of trade of port.

- Medical inspection of vessels.** The following Medical Officers were appointed:—Dr. Killen, Larne; Dr. O'Connor, Glenarm; and Dr. Fegarty, Cushendall. I should state here that in all cases the Customs or coastguards notify Port Medical Officers if there is any sickness on board, and give every assistance in the way of bringing Medical Officers to ships. All vessels coming from Glasgow were inspected by the Medical Officers.
- Quarantine or mooring station.** So far as I could ascertain no mooring station has yet been fixed. It would, I think, be well to draw the attention of both the Rural District Council and the Urban District Council to this matter. I was informed the subject was under consideration, but no definite arrangement has been made. Vessels on arrival are at once boarded by Coastguards or Customs.
- Intercepting hospital.** I do not think one is required here. There is ample accommodation for treatment of cases in Larne Workhouse Fever Hospital and small pox wards.
- Conveyance of patients to hospital.** The ambulance belonging to Guardians is not, I think, suitable; it is out of date, and not fit for conveyance of any case of serious illness. Some arrangements should, I think, be made for providing a more modern ambulance.
- Nursing.** No arrangements have been made to provide special nurses beyond the fact that it is intended, if required, to obtain extra nurses from Belfast. At present it is intended to depend on Fever Hospital staff. I see no necessity at present to move further in this matter.
- Disinfection.** There is a small disinfecting room in connection with Workhouse Fever Hospital; it is quite out of date, and no practical use. District Council should either obtain a disinfecting apparatus of more modern type, or determine to order destruction of all infected clothes or bedding.
- Destruction of rats.** No arrangements were made as to destruction of rats on quays, but orders were given to masters of vessels to have rats trapped. I doubt if District Council saw that this order was carried out.

#### LARNE URBAN DISTRICT.

- Trade.** The remarks made with regard to Larne rural district apply to this Sanitary Authority.
- Inspection of vessels.** Dr. Killen, of Larne, visited vessels from Glasgow, or any vessel, if sickness were reported on board, the officers of Customs giving every assistance in their power.
- Quarantine station. Hospital arrangements.** See Larne rural district. Same remarks apply.
- See Larne rural district.
- There is not any hospital under the control of the Urban District Council. Board of Guardians in 1893, under section 155 of Public Health (Ireland) Act, 1878, entered into an arrangement for use of Workhouse Hospital.
- I do not think there is any urgent necessity for erection of an Intercepting Hospital here, but Urban Council would, I think, do



well to take into consideration the providing of an Infectious Disease Hospital on a small scale, as depending on Workhouse Fever Hospital is open to objection.

Urban District Council have no ambulance, and depend on work-house ambulances, which is not suitable. Ambulance.

See Larne rural district.

Larne urban district depends on use of disinfecting chamber belonging to Larne Board of Guardians. This chamber is of no practical use. Disinfection.

Urban District Council would, I think, do well to obtain a disinfecting apparatus of a modern type.

This subject was brought under notice of Urban District and Rural District Council, but, so far as I can ascertain, no steps were taken, except to order masters of ships to trap and destroy rats on board vessels. Destruction of rats.

### NEWTOWNARDS RURAL DISTRICT.

The harbours included in this rural district are—Bangor, Donaghadee, Groomsport, Ballywalter, Ballyhalbert, Portavogie, and Kircubbin.

Trade is chiefly coastwise and coal trade with Scotch and English Trade ports, viz:—Maryport, Workington, Harrington, Ardrossan, Troon, and Ayr.

Potatoes are carried from Portavogie and Kircubbin to ports on the Bristol Channel.

Dr. Belton, of Bangor (since deceased), appointed by Belfast Port Sanitary Authority; Dr. Nesbitt, Donaghadee; and Dr. MacArthur, Greyabbey, by Newtownards Rural District Council. Port medical officer.

Vessels could not lie with safety in either Donaghadee or Ballywalter Harbours, nor is there any safe open anchorage; so any infected vessels from Donaghadee, Ballywalter, Ballyhalbert, and Portavogie should be sent to Belfast Lough, and from Kircubbin to Orderly Roads, off Strangford. Mooring stations.

I don't think any Intercepting Hospital is required here. At Workhouse Fever Hospital there are old cholera sheds, with accommodation for forty beds. These should be put into proper repair. Isolation hospital.

There is a fairly good four-wheeled ambulance at Workhouse. No objection can, I think, be raised to it. Ambulance.

Usual staff at Fever Hospital, Workhouse; no extra nurses have been engaged, but, if necessary, these could be obtained from Belfast. Nursing, &c.

There is a dry-heat chamber at Workhouse, which has been lately overhauled, but no dry-heat apparatus can be very effectual for disinfection. Sanitary Authority would do well to obtain a more modern type of disinfectant. Disinfecting apparatus.

No steps have been taken in this matter.

Destruction of rats.

### PORTRUSH URBAN DISTRICT.

Passenger traffic with Glasgow weekly, and occasional coal vessels Trade, from Scotch and English ports.

- Quarantine station.** No vessel could with safety anchor outside harbour, so they have to come into harbour.
- Hospital.** I do not think an Intercepting Hospital is required here. If cases occurred in town, they would be removed to Ballymoney Workhouse Fever Hospital.
- Conveyance of patients.** Urban district have no ambulance, and depend on ambulance of Workhouse Fever Hospital. This arrangement is not very satisfactory.
- Dr. Porter, of Portrush, is Port Medical Officer of Health.
- Disinfection.** The Urban District Council have no disinfecting apparatus. Destruction of infected articles would probably be best course to adopt.
- Destruction of rats.** No action taken towards the destruction of rats. The Urban Council would do well to see to this.

### DOWNPATRICK RURAL DISTRICT.

- Harbours.** In Downpatrick rural district there are several small harbours, viz.:—Ardglass, Dundrum, Killough, Killyleagh, Portaferry, and Quoile (which is port for Downpatrick town, but is some distance from town, about two miles).
- Trade.** The principal trade is coastwise. Coal is imported from Great Britain, and potatoes are exported from places on Strangford Lough, the principal ports with which trading is carried on being Belfast, Maryport, Kingstown, Dublin, Liverpool, Swansea, Greenock, Glasgow.
- Port Medical Officers.** The different Dispensary Medical Officers, in whose districts these harbours are situated were appointed Port Medical Officers, viz.:—Drs. Sproule, T. Cromie, M'Comiskey, Dr. Browne, of Portaferry (since resigned), Dr. Olpherts, and Dr. McLaughlin.
- Coastguards or Customs' Officers would, if necessary, convey them on board.
- Quarantine stations.** In Strangford portion of this district Orderly Roads, or, if necessary, vessels could be anchored off Chapel Island. Remaining harbours are tidal, and no mooring grounds could be fixed, so that vessels must come up to piers of different harbours.
- Isolation hospital.** I do not think any Intercepting Hospital is required here, but the present arrangements in Downpatrick Workhouse Fever Hospital are not, I think, satisfactory. The Fever Hospital at present is practically taken up with infirmary cases. I understand this arrangement has gone on for some time. The main body of the Workhouse is empty, and I am informed that, if necessary, infirmary patients could be removed to it, but I don't think this is a good arrangement. Either the Fever Hospital should be kept for its original purpose or some temporary hospital erected for reception of plague, cholera, or small pox patients.
- Ambulance.** The present fever ambulance is not suitable, and Guardians would do well to take this subject into consideration at an early date.
- Nursing.** Fever Hospital staff. No special arrangements for nursing plague cases have been made, but nurses, if required, could be obtained from Belfast. Fever has not been prevalent in this district for some years.

The disinfecting chamber at Workhouse Fever Hospital is quite out of date; if heat was raised sufficiently to disinfect clothes or bedding thoroughly, articles would probably be destroyed. Guardians would do well to provide a modern steam disinfecter.

No arrangements have been made for destruction of rats on quays and vessels.

Disinfection.  
Destruction of rats.

## PORT OF NEWRY DISTRICT.

### HEAD PORT OF NEWRY.

The principal foreign trade is with Norway, Sweden, and Canada, Foreign cargoes generally consisting of timber only. During the year 1899 there were seven arrivals from foreign ports, viz.:—

New Orleans,	.	.	.	1	Grain.
Canada,	.	.	.	1	} Timber.
Norway,	.	.	.	1	
Sweden,	.	.	.	2	
Germany,	.	.	.	2	

There were no clearances to foreign ports with cargoes during 1899.

There is a line of steamers to Ardrossan and Liverpool, carrying passengers, general cargo, and cattle; also steamers of London and North Western Railway Company at Greenore carrying passengers, general cargo, and cattle to Liverpool and Holyhead.

The other coasting trade is chiefly with Great Britain: inwards, coal and grain; outwards, chiefly stone.

		Inwards.	Outwards.
Warrenpoint—Coasting trade		Coal.	Nil.
Rostrevor	" "	"	Stone.
Dundrum	" "	"	General.
Annalong	" "	Coal & general	Stone & potatoes.
Kilkeel	" "	"	"
Carlingford	" "	"	Stone.

Total number of vessels outwards during the month of October—153.

From Great Britain with cargo	.	.	141
" " ballast	.	.	1
			142
From Irish ports:—Cargo	.	.	7
" " Ballast	.	.	4
			11

x

Total number of vessels inwards during the month of October—125.

To Great Britain:—Cargo . . . .	78
"    "    Ballast . . . .	40
	<hr/>
	118
	<hr/>
To Irish ports:—Cargo . . . .	5
"    "    Ballast . . . .	2
	<hr/>
	7
	<hr/>

### NEWRY URBAN DISTRICT.

**Medical inspection of vessels.** The Port Medical Officer is Dr. Martin, of Newry, but before vessels could come up to Newry they would have been inspected by Dr. Bell, of Warrenpoint, Port Medical Officer for Newry Rural District Council and Warrenpoint urban district.

**Quarantine stations.** The "Pool" and Warrenpoint Roads.

**Isolation hospital.** No Intercepting Hospital has been provided. This subject should, I think, be brought under the notice of Port Sanitary Authority, as Newry port has a considerable number of vessels coming into it. For treatment of any cases that might arise in town there is, I think, ample accommodation in Workhouse Fever Hospital. The separation building belonging to workhouse, a detached building, could be used for ordinary fever cases, and the Fever Hospital devoted to plague cases.

**Ambulance.** The only ambulance is that belonging to Newry Board of Guardians. This is not suitable. A new ambulance should be provided.

**Nursing.** Superintendent nurse has volunteered to take charge of plague cases. Additional nurses, if required, to be engaged from Belfast or Dublin.

**Disinfecting apparatus.** No disinfecting apparatus has been provided, the probability being that the different Sanitary Authorities would order the destruction of infected articles. This course is, I know, contemplated.

**Destruction of rats.** No arrangements on this head were made by Port Sanitary Authority. It would, I think, be well to address them on the subject, as so many vessels come into Newry, and the extent of quays is considerable, while there are also large stores adjacent to quays.

### NEWRY.—Nos. 1 AND 2 RURAL DISTRICTS.

The harbours in this district are Newry and Warrenpoint, so that observations made with regard to Newry urban district apply to these districts. All vessels coming up to Newry must pass Warrenpoint.

## 307 KILKEEL, WARRENPOINT.

Dr. Bell was appointed by the Guardians as Port Medical Officer of Health, and examined all vessels coming to Newry. He was brought in Customs' boat to the vessels. Inspection of vessels.

The "Pool," situated about three miles off Warrenpoint, and Warrenpoint Roads. Mooring grounds.

No disinfection hospital has been provided. The different Sanitary Authorities for port of Newry would do well to join in providing a permanent Intercepting Hospital for this important port. Hospital accommodation.

Fever Hospital in Newry would be sufficient for any cases that might occur in rural district or urban district.

A proper ambulance should be provided. The only ambulance is that belonging to Newry Board of Guardians. It is not fit for the purpose. Ambulance.

There is no disinfecting apparatus. Disinfection.

No action taken. This duty, would, I think, more properly fall on the Urban District Council. Destruction of rats.

### KILKEEL RURAL DISTRICT.

This Sanitary Authority has within its jurisdiction four small Trade harbours, viz. :—Newcastle, Annalong, Kilkeel, and Rostrevor.

Practically the only trade is coasting trade, importation of coal from Scotch and English ports, and export of stone from quarries at Annalong and Rostrevor.

Dr. Magill, of Newcastle, was appointed Port Medical Officer of Health for Newcastle; Dr. Floyd, of Kilkeel, for Annalong; Dr. Evans, of Kilkeel, for Kilkeel; and Dr. Vesey, of Rostrevor, for Rostrevor. Inspection of vessels.

Arrangements were made for coastguards to inform Medical Officers if any sickness was on board any vessel, and, if necessary, convey Medical Officers to vessel.

Newcastle or Dundrum Bay, Annalong, Kilkeel Bays, and Carlingford Lough, for Rostrevor. Quarantine stations.

Workhouse Fever Hospital could be used for any cases likely to occur in this portion of the district. I do not think an Intercepting Hospital is required here.

The ambulance can only be considered fairly suitable; it is the property of the Guardians, who would do well to obtain an ambulance for Fever Hospital of a more modern type, in which patients could be conveyed in greater comfort. Ambulance.

Fever Hospital staff, and, if required, additional nurses could be obtained from Belfast. Nursing.

There is no disinfecting apparatus. Guardians would do well to obtain a steam disinfecting apparatus. Disinfection.

No action up to this has been taken by Rural District Council. Destruction of rats.

### WARRENPOINT URBAN DISTRICT.

The trade of this harbour consists principally of imports of coal from Scotch and English ports—Liverpool, Glasgow, Ardrossan, and Swansea. About eight vessels per month arrive. Trade.

Medical inspection.	Dr. Bell, of Warrenpoint, is Port Medical Officer.
Mooring grounds.	The "Pool" or Warrenpoint Roads in Carlingford Lough.
Hospital accommodation.	There is no Intercepting Hospital for port of Newry. One is, I think, necessary. All vessels coming to Newry would be stopped about three miles from Warrenpoint, which is a considerable distance from Newry Fever Hospital, the nearest available hospital.
Nursing and ambulance.	As there is no hospital in Warrenpoint, any case that might occur in Warrenpoint would have to be conveyed by road to Newry Workhouse Fever Hospital. A proper ambulance is very much required for port of Newry, in which Warrenpoint is situated.
Disinfection.	No disinfecting apparatus. Destruction of infected articles would, I think, be the best course to adopt.
Destruction of rats.	Nothing has been done. Urban Council should see to this.

#### DUNDALK RURAL DISTRICT.—PORT OF NEWRY.

Port of Newry.	The harbours referred to in this report are not in my district as Medical Inspector, but are part of the port of Newry.
Trade.	Coasting trade with Carlingford, Greenore, Ballyronan, and Omagh, and coal with Scotch and English ports.
Medical inspection.	Dr. Finegan, Abbey View, Carlingford, is Port Medical Officer.
Quarantine station.	The "Pool," Carlingford.
Isolation Hospital.	None in neighbourhood, but there is, I am informed, an Isolation Hospital at Soldiers' Point, Dundalk.
Ambulance.	Fever van at Dundalk Workhouse.
Nursing.	I understand that nurses will be sent from Cork-street Fever Hospital, Dublin, if required.
Disinfection.	I am informed there is a steam disinfecting apparatus at Dundalk Workhouse.
Destruction of rats.	So far as I know, nothing has been done at Carlingford.

In conclusion, I wish to add, for the information of the Local Government Board, that, as a general rule, the different Sanitary Authorities were fully alive to the importance of adopting precautions against the importation of plague into their districts. In all the ports in my district a marked improvement was made in the general cleanliness of the yards and streets in these towns. The only serious defect in my district is, I think, the want of an Intercepting Hospital for Newry port. The cost of this, spread over different sanitary districts would be small, and considering the extent of trade with Newry, it is most important that a permanent hospital should be provided.

CUTHBERT J. CLIBBORN,  
Medical Inspector.

November, 1900.

# REPORT ON THE PRECAUTIONARY MEASURES TAKEN AGAINST THE INTRODUCTION OF PLAGUE AT PORTS BETWEEN PORTRUSH, COUNTY ANTRIM, AND KINNASHANAGH POINT, COUNTY SLIGO.

By Dr. E. CORY BIGGER.

## COLERAINE.

Situated on the Bann, about three miles from the sea. Two Trade-  
or three vessels coming from Glasgow each week, and various other  
vessels from other ports; also occasionally a foreign vessel.

All vessels coming from Glasgow were inspected on arrival Inspection  
at the port (but if there was any sickness on board, they were in-  
spected before reaching the port) by Dr. Creery, Coleraine.

The quarantine or mooring station was Skerry Roads, which Mooring  
is in the open sea several miles from Coleraine, but sheltered by the Station.  
Skerry Rocks or Islands.

There is no Intercepting Hospital. Arrangements were made Isolation  
to take in any cases that might occur into the Union Fever Hospital.  
Hospital, which is about half a mile from the quay, and where isola-  
tion would have been provided.

The conveyance of patients to hospital would have been in Ambu-  
lance. A nurse was specially employed, and  
the Union fever ambulance. A nurse was specially employed, and  
kept for several weeks in the Fever Hospital.

No special apparatus provided for disinfection, but it was Disinfection  
intended to burn any infected clothing, and vessels were to be disin-  
fected, if there was any suspicious case.

No special means were taken for the destruction of rats, but I Destruction  
was informed that there were very few about the harbour.

All the arrangements were in charge of a Committee of the Guar-  
dians, who had power to act at once.

## LONDONDERRY.

This port, on the Foyle, is in constant trade with Glasgow, Trade,  
one vessel coming every day, besides other vessels from Liverpool,  
&c. There are also a number of foreign vessels coming into the  
port.

All vessels which came from Glasgow were inspected by Dr. Inspection  
Newell at Moville, as they entered the Foyle.

The quarantine or mooring station is at the mouth of the Mooring  
Foyle, between Moville and Magilligan Point. Station.

**Isolation Hospital.** There is an Intercepting Hospital at Magilligan Point, in which there was a suspected or suspicious case landed from the s.s. Thistle on the 12th September last, while on passage from Glasgow to Londonderry. The doctor took the names and destination of all the passengers, so that the different Medical Officers of Health could be warned, into whose district they were going to reside, and the vessel was thoroughly disinfected. The patient was conveyed by small boat from steamer to landing place, quite close to the hospital, and a nurse was procured from Belfast at once. Arrangements had been made that if any cases had occurred in Londonderry they were to be accommodated in the Small-pox Hospital, Foyle-hill, which appeared a very proper, well-isolated place for any case or suspected case, and all arrangements were made for the reception of such.

**Disinfection.** There is no proper disinfector in Londonderry, the only process being the burning of sulphur, carbolic acid, &c., but it was decided to burn any infected clothing, &c. The Borough Council have arranged to advertise for a new steam disinfector, which it is their intention to erect at their Infectious Diseases Hospital, Foyle-hill.

**Destruction of rats.** No special arrangements were made for the destruction of rats.

#### KILLYBEGS.

**Trade.** Situated in a small bay, it has very little communication with Glasgow unless an occasional coal vessel. The most of the trade is coasting.

**Inspection.** At the time of my inspection I was informed by the Chief Officer of Coastguards that if any vessel did come in from Glasgow he would have it examined by the Medical Officer of Health, Dr. Gallagher, Killybegs.

**Mooring station.** The quarantine or mooring station is Walker's Bay.

**Hospital.** If any case had occurred it would have been taken to the Union Fever Hospital at Glenties, in the Union fever ambulance.

**Disinfection.** No disinfection except by burning sulphur, carbolic acid, &c.

**Destruction of rats.** There were no rats at quay, there being no sheds.

#### DONEGAL.

I inspected this port, but there were no vessels coming from Glasgow, and no foreign trade.

#### BALLYSHANNON.

I inspected this port, but it is only a summer port, no vessels being able to get into it late in the autumn or winter.

#### RATHMULLEN.

On Lough Swilly, but it had no communication with Glasgow, except it was a small coal vessel in the summer. There is no foreign trade.

#### SLIGO.

**Trade.** One of the largest ports in the West of Ireland, there being two or three vessels each week from Glasgow, as well as several others from Liverpool, &c. Also some foreign vessels.



Vessels coming from Glasgow were inspected by Dr. Flanagan, Inspected n.  
 Cashelgarron, County Sligo. They were generally inspected off Rock  
 Lighthouse, which is about two miles out from Ross's Point, but  
 in rough weather he had to board them in the channel. All the  
 passengers names and destinations were taken by Dr. Flanagan,  
 and when anyone came from near the infected districts, his name  
 and address was sent to the Medical Officer of the district.

The quarantine or mooring station is at Wheaten Rock.

Mooring  
 station.  
 Isolation  
 hospital.

No Intercepting Hospital, but the Medical Officer, Dr. Flana-  
 gan, was instructed by Plague Committee to try and procure a  
 suitable house that would do for a hospital at Rockley or Knocklane,  
 but he could not obtain such, after which the Guardians were re-  
 quested by Dr. Browne, Local Government Board's Inspector, to erect  
 one on the Workhouse grounds. I attended the Plague Committee  
 meeting in support of it, also the Guardians' meeting. The former  
 passed a resolution in favour of erecting an Isolation Hospital in  
 the grounds, and this was confirmed by the latter, but I believe  
 nothing has yet been done.

If any case had occurred it would have been sent to the County  
 Fever Hospital, which is less than a mile from the quay. The  
 Guardians undertook to supply whatever nursing would have been  
 required.

The conveyance of patients would be by the fever ambulance  
 in connection with the County Fever Hospital.

Ambu-  
 lance.

Disinfection would be by burning sulphur and carbolic acid  
 in the small chamber at the Fever Hospital.

Disinfe-  
 ction.

There was no special destruction of rats.

Destruc-  
 tion of  
 rats.

In conclusion I may say that the arrangements at Coleraine were  
 satisfactory, except the want of a proper disinfectant, and I think  
 the ambulance might be much better.

The arrangements on the whole at Londonderry are good, but in  
 case of further inspection of vessels, I think vessels might be inspected  
 as they approach the harbour, which would, in my opinion, be equally  
 good and much more convenient for the vessels, causing them less  
 delay, &c.

The arrangements at Sligo were not what they should be. Hospital  
 accommodation at the time of my visit was not sufficient, and, for  
 an urban district of its size and a port of its importance, I would  
 recommend that a proper disinfecting apparatus should be provided.  
 With regard to future inspection of vessels, it might with advantage  
 be allowed to take place near the harbour. This would facilitate the  
 medical inspection, and cause less delay and inconvenience to the  
 vessels.

I think it would be well if pressure were brought upon the  
 different authorities with the object of improving the arrangements  
 that I have indicated.

E. COEY BIGGER.

Medical Inspector.

November. 1900.

# REPORT ON THE PRECAUTIONARY MEASURES TAKEN AGAINST THE INTRODUCTION OF PLAGUE AT PORTS BETWEEN KINNASHANAGH POINT, COUNTY SLIGO, AND BEAL POINT, COUNTY KERRY.

By SIR ACHESON MACCULLACH, M.D.

## PORT OF LIMERICK.

(From Beal Point, County Kerry, to Hag's Head, County Clare.)

- Trade.** The principal trade is in wheat, maize, coal, timber, sugar, salt, and such like commodities. The wheat comes from Portland and San Francisco; the maize from the Black Sea and America. The Limerick Steamship Company, Limited, carry on a regular trade in Continental sugars from Hamburg and Amsterdam. There is also direct weekly communication by steamer with Liverpool and Glasgow.
- Inspection of Vessels.** Dr. Shanahan, the Crescent, Limerick, is the Port Medical Officer, and all vessels coming from Glasgow were examined by him at the Pool, outside Limerick Harbour, the coastguards and harbour officials rendering every facility. Scatterry Island was fixed as the quarantine station. The "sheds" attached to the Limerick Workhouse, and formerly, I understand, used for the treatment of small-pox patients, were put in order, and made ready for the reception of patients. Nurses, if necessary, would be procured from Dublin. There is an ambulance and a disinfecting chamber at the workhouse.
- Isolation Hospital.**

At first vessels from Glasgow were also medically inspected at Scatterry, outside Kilrush, but, as practically no vessels call at Kilrush, and the steamers arrive at Limerick only some four hours later, this was discontinued unless in the case of a vessel putting into Kilrush, or of one happening to have any sort of illness on board. Dr. Counihan, senior, is the Port Medical Officer at Kilrush.

## PORT OF GALWAY.

(From Hag's Head, County Clare, to the Erriff River, on confines of Counties Galway and Mayo.)

- Trade.** The trade is chiefly with Liverpool, Glasgow, and Cardiff in coal and general cargoes. Steamers from Liverpool and Glasgow also call, on an average, fortnightly.
- Inspection.** Dr. Michael Lyden, Mounipellier-terrace, Galway, is the Port Medical Officer, and all vessels coming from Glasgow were detained by the Harbour Master in the "Roads" outside till inspected by him.
- Quarantine Station.** The quarantine station was fixed about two and a half miles from the harbour.
- Isolation Hospital.** On a piece of land remote from any buildings, and approachable by road and by water, there is an Isolation or Intercepting Hospital, capable of accommodating twelve patients. This was put in order, and could have been used for the reception of patients within two hours, as beds and all other necessities were in readiness at the Workhouse. Nurses would have been procured from Cork-street Fever Hospital. There is a good ambulance, and, at the Fever Hospital, an efficient disinfecting chamber.

## PORT OF WESTPORT.

(From Erriff River to Kinnashanagh Point, County Sligo.)

The trade of Westport is chiefly with places in the United Kingdom for coal, flour, salt, bran, &c. During the present year three Trade of Westport. vessels arrived with cargoes of maize from San Francisco, Baltimore, and Philadelphia. A steamer from Glasgow calls fortnightly.

The Port Medical Officer is Dr. Birmingham, the Mall, Westport, who examined all vessels arriving from Glasgow, information of their arrival being conveyed to him by the coastguards and harbour officials. Inspection

Dorinch Island was fixed as the quarantine station. Provision was made for the reception of patients at the Workhouse Fever Hospital; it is isolated, and there is ample room. Nurses were to be procured from Dublin. The ambulance is a fairly good one, but there is no disinfecting chamber. Quarantine Station.

At Ballina, also within the limits of the port of Westport, on an average twenty vessels a year put in with cargoes of coal, bran, salt, &c. A steamer from Glasgow calls fortnightly, and one from Liverpool almost every week. Trade of Ballina.

All vessels from Glasgow were inspected by Dr. Laing, Tivoli, Ballina, the Port Medical Officer, the quarantine station being fixed close to Inniscrone. Inspection

Arrangements for the reception of patients were made at the Workhouse Fever Hospital. If necessary, nurses would have been procured in Dublin. There is a good ambulance and a disinfecting chamber at the Workhouse. Hospital

The Glasgow steamers arriving at both Westport and Ballina call at Sligo some twenty-four or thirty hours previously.

At none of the ports were any steps taken for the destruction of rats. Destruction of rats.

## GENERAL REMARKS.

I consider the arrangements at the different places were fairly satisfactory, except as regards the hospital accommodation at Limerick, and the want of an efficient disinfecting chamber at Westport.

The arrangements as to hospital accommodation for plague patients at Limerick is far from satisfactory, and I consider an Isolation Hospital absolutely essential, and the local authority should be urged to provide one. The Westport local authority should be requested to provide a disinfecting chamber.

I desire to express my acknowledgments of the courtesy of the Collectors of Custom at Limerick and Galway, and the assistance rendered by the harbour officials at the different places.

J. ACHESON MACCULLAGH

Medical Inspector.

November, 1900.

**REPORT ON THE PRECAUTIONARY MEASURES TAKEN  
AGAINST THE INTRODUCTION OF PLAGUE AT  
PORTS BETWEEN BEAL POINT, COUNTY KERRY,  
AND WATERFORD HARBOUR, INCLUSIVE.**

By Dr. J. COOPER STAWELL.

WATERFORD.

Nature and extent of trade of port.	—	1892.	No. of Vessels.	Tonnage.
Foreign, Inwards,	. .	Steam,	31	30,915
"	. .	Sail,	34	11,830
Foreign, Outwards,	. .	Steam,	2	1,673
"	. .	Sail,	69	5,568
Coasting, Inwards,	. .	—	1,532	420,712
" Outwards,	. .	—	1,540	420,150

The foreign trade is mainly with the United States of America, Canada, Argentine Republic, Roumania, Norway, Hamburg, Jersey,

The home trade is with Glasgow, Bristol, Liverpool, Milford, Plymouth, Cork, Cardiff, London, and Dublin.

The foreign imports are:—Timber, sugar, ice.

The coastwise imports are general merchandise, and coal, bricks, slates; and the coastwise exports are pit-wood, oats, barley. About six small cargoes of bones and rags are shipped each year—principally to Scotland. There are no imports or exports deleterious to health.

**Medical inspection of vessels.** A Port Medical Officer of Health has been appointed, and has received instructions to board at Passage East, at the mouth of the Suir, all vessels coming from the infected area. The coastguards and Customs' officers will facilitate by announcing to him when such vessels are about to arrive, and the vessels will not be allowed to proceed up the river until the Medical Officer is satisfied as to the health of all on board.

**Quarantine station and isolation hospital.** Quarantine station has been fixed close to the Isolation Hospital, which is situated at Passage East, and is under the charge of the Port Medical Officer of Health, Dr. Stephenson, of Dunmore. The hospital is completely isolated, is in excellent order, and capable of accommodating about twelve patients.

**Conveyance of patients to hospital.** A landing place has been provided, to which the patient can be brought direct by boat from the ship, and carried up a path to the hospital.

**Nursing.** In the event of a suitable nurse not being available from the existing staff, the Sanitary Authority would telegraph to Cork or Limerick, where arrangements have been made for the immediate supply of nurses.

**Disinfection.** The Medical Officer will, in case of plague, burn all clothing and bedding which have been in contact with the sick, taking a careful inventory and making an approximate estimate of the value of such articles. The portion of the ship in which the patient has been will be thoroughly fumigated with sulphur, thoroughly scrubbed with lotions of Watkins' Pitchford Corrosive Sublimate (1 in 500) or carbolic acid (1 in 50), the process to be repeated twice.

In an infected ship all rats would be destroyed, and all bilge water pumped out before she was allowed to communicate with the shore. The latter process would be done in open sea, and not in the harbour. As regards rats, nothing short of a special order will make the Sanitary Authority at the various ports, which are under medical supervision, take steps for their destruction on shore until plague is actually in their midst. Destruction of rats.

These remarks as to rats, and the steps mentioned as having been taken for disinfection apply to all the ports in my charge, and will not, therefore, be repeated in this Report.

#### DUNGARVAN.

The trade of the port is very small, and almost exclusively confined to coasters, there being practically no foreign trade. Trade of port

The coastwise imports and exports are similar to those at Waterford.

A Port Medical Officer of Health, Dr. Williams, has been appointed, and the coastguards at Ballynacourty, at the mouth of the harbour will communicate with him by telephone on the arrival of any vessel from the infected area, and detain such vessel until he has boarded her, and satisfied himself as to the health of all on board. A supply of disinfectants will be kept at Ballynacourty. Medical inspection of vessels.

Quarantine ground has been selected.

Quarantine ground.

The building formerly used as a fever hospital is in habitable order, and well isolated. Rooms in it suitable for nurses and patients have been selected, and arrangements made for the immediate undertaking of cleansing and such repairs as are necessary. Patients can be conveyed direct from the ship to the hospital by water at full tide. Special nurses will be procured from Cork or Limerick. Isolation hospital.

#### YOUGHAL.

Foreign trade:—Timber is imported from North America, and occasionally from Norway and Germany. Some vessels also come from the Channel Islands in ballast. Trade of port.

Imports.—Coal, salt, manure, cement, bran, flour, maize, bricks, pipes. Exports.—Oats, timber, bricks. Rags, and shoddy are not imported or exported.

Dr. Ronayne, of Youghal, is Port Medical Officer of Health, and will board and examine all vessels from the infected area, the Coastguard and Customs' officers agreeing to announce to him their arrival, and preventing all communication with the shore until he has completed his inspection. Medical inspection of vessels.

There is no safe anchorage outside Youghal, so no quarantine ground could be fixed, but the coastguards have agreed to stop each vessel opposite their station, which is below the harbour, until she has been examined by the Port Medical Officer. Quarantine station.

Excellent accommodation with isolation could be had in the (formerly) Industrial Schools, but as it is likely these premises may ere long be utilised as an auxiliary asylum, there was an objection to using them for cases of plague. Midway between these buildings and the Workhouse is a cottage in good repair and well isolated, which would be very suitable. The landlord, Mr. McNamara, of Seafeld, is willing to let it for the purpose, and the Sanitary Authorities have

been strongly urged to acquire it. Failing either of these premises, there is nothing but the Fever Hospital, which is unsuitable for the treatment of disease of any kind.

Convey-  
ance of  
patients to  
hospital.

Patients are to be taken by boat from the ship to Green's-quay, which is a wide, open space with no houses very near. They are there to be met by an ambulance, which would only have to traverse about forty yards of thoroughfare before turning up a lane leading to the hospital.

Nursing

Special nurses will be procured from Cork or Limerick by telegram.

# CORK.

Nature  
and extent  
of trade  
of port.

Number and tonnage of vessels, inwards and outwards, during the year 1899:—

	No.	Tonnage.
Foreign, Inwards, . .	166	144,534
"    Outwards, . .	41	29,611
Coastwise, Inwards, . .	1,339	693,036
"    Outwards, . .	1,345	579,264

Foreign  
trade.

The principal foreign trade is with the following countries, the name of the most usual imports being written opposite to each:—

Country.	Imports.
United States, . . . .	Corn.
Holland, . . . . .	General cargo, spirits.
Germany, . . . . .	"
Canada, . . . . .	Timber.
Norway, . . . . .	"
Russia (South), . . . .	Corn.
" (North), . . . .	Timber.
France, . . . . .	Straw, gypsum.

By the term "General Cargo" is to be understood every article in ordinary use in human life. It does not comprise anything deleterious to health.

Coasting  
trade.

The principal coasting trade is carried on by the Cork Steam Packet Company and the Clyde Steamship Company, the former trading with Milford, Cardiff, Newport, Liverpool, London, Bristol, Dublin, Plymouth, Southampton; the latter with Glasgow, Belfast, Dublin, Schull, Bantry, Castletownberehaven, Sneem, Valencia, Dingle, Valencia Island, Cahirciveen. The boats of both these companies carry general cargo and some rugs, the Clyde Steamship Company carrying also some shoddy, and fish occasionally in the season. The Cork Steamship Company carries neither shoddy nor fish.

Medical  
inspection  
of vessels.

A Port Medical Officer of Health has been appointed at Queenstown, and he will board all vessels from the infected area, and satisfy himself as to the health of all on board before he allows them to go up to Cork. The coastguards and Customs' officers will announce to him the arrival of such vessels, and prevent any communication between them and the shore.

Quarantine ground has been fixed.

Quarantine ground.

Isolation Hospital has been provided near Queenstown for the reception of cases of seahorne plague. It is fully equipped with beds and bedding, and provided with a disinfecting apparatus and ambulance.

Isolation hospital.

Patients will be brought by boat to a beach where there are no habitations. They will there be met by the ambulance and conveyed to the hospital direct.

Conveyance of patients to hospital.

#### KINSALE.

Almost exclusively coasting, with usual imports and exports of that trade. Ice for fish, and timber, might occasionally arrive from foreign.

Trade of port.

Port Medical Officer of Health—Dr. Vickery, of Kinsale, has been appointed, and will board and examine all vessels from the infected area, but in a small port like Kinsale vessels often come in and go out unexpectedly and unnoticed.

Medical inspection of vessels.

Coastguards will announce the arrival of each vessel from infected area in every case possible.

Quarantine ground has been fixed.

Quarantine ground.

There are no buildings available save the Fever Hospital and the "cholera shed," the former being built of wood, the latter of stone. Both are close to each other and to the main buildings. As the cholera shed is all in one room and the Fever Hospitals (two, male and female) are each divided into apartments, it was suggested that the Male Fever Hospital should be utilised for cases of plague, while the male fever cases should be treated in the cholera shed. This makes provision for the treatment of male and female cases of plague.

Isolation hospital.

Patients can only be brought from the pier to the hospital by ambulance. Water carriage is not possible.

Conveyance of patients to hospital.

Special nurses will be procured from Cork or Limerick.

Nursing.

#### CLONAKILTY, ROSSCARBERY, COURTMACSHERRY, TIMOLEAGUE.

These places are grouped together, as Clonakilty is the hospital centre for them all.

Coasting only. Usual imports and exports.

Trade.

Port Medical Officers are appointed at each place, and will board and examine all vessels from the infected area. The coastguards will announce to them the arrival of such vessels.

Medical inspection of vessels.

Quarantine grounds have been fixed.

Quarantine ground.

- Isolation hospital.** The old Cholera Hospital at Clonakilty is a fine building, and splendidly isolated. The dispensary is at present in part of it, but arrangements were made for the provision of other premises for the dispensary, so as to have the hospital available at any moment.
- Conveyance of patients to hospital.** At high tide patients could be brought a great part of the way by water, and an ambulance could then convey them to the hospital without approaching many habitations.

---

### SKIBBEREEN, UNION HALL, CASTLETOWNSHEND, BALTIMORE.

These places are grouped together, because they are all in Skibbereen Union, and must send their cases of plague to the hospital at Skibbereen.

- Trade.** Coasting. Imports and exports of usual character. A large fishery and school exist at Baltimore, to which the ice may be brought from foreign. Trade of these ports small.
- Medical inspection of vessels.** Port Medical Officer of Health has been appointed as Skibbereen, to whom the coastguards and Customs' officers at all above ports will give due notice of the arrival of a vessel from the infected area, and detain her until he has satisfied himself as to the health of all on board.
- Quarantine ground.** Quarantine grounds have been fixed.
- Isolation hospital.** The only available place is the "cholera shed" at the Workhouse. One end of this is now used as a carpenter's shop, and off the other is a room, which could, by a little expenditure, be made available for a kitchen or a nurse's room. The necessary arrangements have been explained to and urged upon the Sanitary Authority.
- Conveyance of patients to hospital.** Patients must be conveyed by ambulance from the boat which lands them.
- Nursing.** Special nurses will be got from Cork or Limerick.

---

### SCHULL, CROOKHAVEN, AND GOLEEN.

The two latter are grouped with Schull, as the only available hospital accommodation is at the latter place.

- Trade.** Coasting only. Usual imports and exports.
- Medical inspection of vessels.** Port Medical Officers of Health are at Schull and Goleen (for Crookhaven), to whom information will be given by the coastguards at Schull and Rock Island of the arrival of any vessel from the infected area. These vessels will not be allowed to communicate with the shore until the Medical Officer has satisfied himself as to the health of all on board.
- Quarantine grounds.** Quarantine grounds are provided.



The only place available is the so-called Fever Hospital, which is very well isolated, but is very old, and would require considerable expenditure to make it in any way suitable for accommodating patients. Its condition just now is scandalous. The necessary improvements were urged upon the local authority.

The hospital is a considerable distance—nearly a mile—from the pier, and the patients should be conveyed in an ambulance.

Isolation hospital.

Conveyance of patients to hospital.

Nursing.

Special nurses would be procured from Cork or Limerick.

## BANTRY.

This may be looked upon as almost entirely coasting with the Trade. usual imports and exports.

Port Medical Officer has been appointed, and has received the usual instructions as to boarding and examining vessels from the infected area; but as there are no coastguards or Customs' officers at Bantry, it will be difficult for him to obtain information of the arrival of such vessels. The only port official is the Harbour Constable, who will do all in his power to facilitate the Medical Officer. Nearly, if not quite, all of the vessels going to Bantry will, however, be boarded and examined at Castletownberehaven, at the entrance to Bantry Bay.

Medical inspection of vessels.

Quarantine or mooring ground exists.

Quarantine ground.

The casual wards at the Workhouse can be made available, there being ample accommodation for casuals in the unused portions of the Workhouse. These wards are close to the entrance gate, but a good distance from the main buildings. There are "cholera sheds" close to the Workhouse, but they are unfit for habitation. The necessary procedure has been duly explained to the Sanitary Authority.

Isolation hospital.

Patients will have to be conveyed from the Boat a considerable distance in an ambulance to the hospital.

Conveyance of patients to hospital.

Special nurses will be procured from Cork or Limerick.

Nursing.

## CASTLETOWNBEREHAVEN.

The only foreign trade is ice from Norway in the fishing season, and exporting pickled mackerel to U.S.A. Coasting trade—Steamers from England with coals, and Clyde steamer, and Cork and Limerick vessels with usual coasting imports and exports. The Royal Navy makes this place a port of call.

Trade.

Port Medical Officer of Health has been appointed, and he will board all vessels from infected area, the coastguards and Customs' officers announcing to him the arrival of such vessels, and not allowing them to have any communication with the shore until after he has made his inspection.

Medical inspection of vessels.

Quarantine ground has been fixed.

Quarantine ground.

- The only available place is the "cholera shed" at the Workhouse, which is isolated.
- Arrangements have been made as to some repairs which are required.
- They would have to be conveyed by ambulance a considerable distance from the boat.
- Special nurses can be procured from Cork or Limerick.

## KENMARE AND SNEEM.

- Coasting:—Usual imports and exports.
- Port Medical Officer at Sneem, with whom the coastguards at Lackeen will communicate when any vessel arrives from the infected area. They will make her anchor off Dromore Castle, and allow no communication with the shore until the Medical Officer has satisfied himself as to the health of all on board.
- Quarantine ground is provided.
- The "cholera cottage" in the Workhouse grounds, Kenmare, could be made available by carrying out certain small alterations, such as erecting a partition, putting in a new window, &c., which was explained to the authorities.
- In fine weather they can be taken by boat right up to Kenmare, and landed either at the pier, where there are very few houses, or, and preferably, if the tide serves, at a spot selected on the beach above the pier, and where there are no houses. If the weather be bad they would have to be landed near Lackeen, and conveyed by road to Kenmare, a distance of several miles.
- Special nurses can be procured from Cork or Limerick.

CAHIRCIVEEN, VALENCIA ISLAND, WATERVILLE,  
BALLINSKELLIGS.

- The above are grouped together, as they are all in Cahirciveen Union, and all patients must be taken to the hospital at Cahirciveen.
- Foreign:—Practically nil, except perhaps ice for the fishery at Valencia.
- Coasting:—Usual coasting imports and exports.
- Port Medical Officers of Health have been appointed for each place, and they will receive notice of the arrival of all vessels from the infected area through the coastguards and Customs' officers, who will not allow the vessels to have any communication with the shore until the Medical Officer has satisfied himself as to the health of all on board.
- Quarantine grounds have been fixed.

Representations were made to the Sanitary Authority as to the desirability of purchasing a hulk (of which there are several in Valencia Harbour), and fitting her up as a floating hospital. She would then be ready for every emergency and afford complete isolation. The expense of maintenance would, however, probably be considerable. Failing this, the only suitable available accommodation is the "convalescent" wards at the Workhouse, which would suit fairly, though rather close to the main building.

Patients could be brought up the river by boat at high tide to within a short distance of the Workhouse, and then carried or put into an ambulance, and brought to back doors of the "convalescent" wards without having any communication with the main building.

Special nurses will be procured from Cork or Limerick.

Isolation hospital.

Conveyance of patients to hospital.

Nursing.

### DINGLE AND VENTRY.

Coasting:—Usual coasting imports and exports small.

Trade.

Port Medical Officers of Health have been appointed, to whom the coastguards and Customs' officers will announce the arrival of each vessel from the infected area, detaining such vessel, and forbidding all communication between her and the shore until the Medical Officer has boarded her, and satisfied himself as to the health of all on board.

Medical inspection of vessels.

Quarantine stations have been fixed.

Quarantine stations.

The only place available is the old "cholera shed," which is not sufficiently isolated, and is stated to be full of rats. Strong representation was made to the Sanitary Authority as to the necessity of putting the shed into thoroughly habitable order, and exterminating the rats.

Isolation hospital.

Patients must be conveyed by ambulance from the boat to the hospital.

Conveyance of patients to hospital.

Special nurses will be procured from Cork or Limerick.

Nursing.

### TRALEE.

1900.—Jan. 1st to Oct. 30th.

	No. of Vessels.	Tonnage.
Foreign, inwards—Steam,	—	18,401
Sail,	37	2,606
Foreign—Outwards, with cargoes,	Nil.	—
Coasting—Inwards, with cargoes,	199	—
Outwards,        "	97	—

Nature and extent of trade of port.

The foreign trade is with Hamburg, Ghent, Amsterdam, Philadelphia, Baltimore, Norwegian ports, Havre, Christiania, Mobile, St. John's, N.B., and the cargoes consist of sugar, glass, hoops, cement, bottles, meat, preservative machinery, maize (in bags and bulk), ice, flour, timber.

Y

The coasting trade is with Liverpool, Cork, Limerick, Troon, Cardiff, Swansea, Newport (Mon.), Chester, Glasgow, Ardrossan, Irvine, Gloucester, Neath Abbey, London, Kinsale, Yarmouth, Fleetwood, Berehaven, Milford, Remcon, Preston, Portmadoc, Galway, Whitehaven, Ayr, Barrow-in-Furness, Garston, Bridgewater, Dublin.

Coastwise Imports:—General cargo, flour, coal, iron, salt, manure, bricks, petroleum, boxwood.

Coastwise Exports:—General cargo, pitwood, oats, fish, barley, timber, scrap iron, flags.

No rags, shoddy, or deleterious articles imported.

Medical inspection of vessels. Port Medical Officer of Health has been appointed, and the coastguards or Customs' officers at Fenit, at the mouth of the harbour, will at once announce to him by telegraph the arrival of any vessel from the infected area, detaining such vessel, and preventing communication between her and the shore until the Medical Officer has satisfied himself as to the health of all on board.

Quarantine ground has been fixed.

Quarantine ground.  
Isolation hospital.

A site was decided upon at Fenit for the erection of an Intercepting Hospital, and, after many delays, the Sanitary Authority agreed to have the work proceeded with and a hospital erected for the accommodation of six persons, according to Local Government Board Plan No. 1. It is now understood that since the plague has died down they have abandoned the scheme.

The site selected at Fenit is suitable, except for the water supply which is not good, but an alternative site with a good supply of water might be had on an island near the shore opposite to Fenit. It would not, however, have railway or telegraphic communication with Tralee, both of which are available at Fenit.

If an Intercepting Hospital is not erected, there is no place for the reception of plague cases but the Tralee Fever Hospital, which is situated in the town, and is not suitable.

Conveyance of patients to hospital. When they are landed by boat at Tralee they must be brought by ambulance through crowded streets to the hospital. If the Intercepting Hospital were built they could be landed direct from the boat.

Nursing. Special nurses must be procured from Cork or Limerick.

## SUMMARY.

Cork and Waterford. I think the arrangements at Cork and Waterford are sufficient except as regards the destruction of rats, and on this point I have already expressed my opinion.

I should also say that there is no disinfecting apparatus attached to the Waterford Intercepting Hospital, and that the apparatus in the city is obsolete and of little use.

Youghal. Strong pressure should be brought to bear upon the local authority not only as regards providing an Intercepting Hospital, but also as regards building a proper Fever Hospital. That at present in use is scandalous.

Skibbereen. The recommendations which I made as to the existing cholera sheds should be urged upon the authorities. Strictly speaking, these sheds are too close to the Workhouse.

I cannot too strongly condemn the arrangements for the Fever School Hospital at this place. A considerable sum should at once be spent if it is to be put into even habitable order. It is the only place available for cases not alone of plague, but of ordinary fever, and is quite unfit for human habitation at present. It serves a very large area.

The question of fitting up a hulk as a hospital might be impressed upon the local authority, although I fear the expense will deter them. It would be more expensive to maintain than a building on shore, but would be perfect from an isolation point of view. The only buildings at present available for plague are the "convalescent" wards at the Workhouse, which are close to the main buildings.

The cholera sheds here are really not sufficiently isolated, but the trade is so small it would hardly be necessary to get another isolation hospital built. The authority should, however, be strongly urged to put the shed into thoroughly habitable order, and to exterminate the rats which infest them.

Although the Sanitary Authority here agreed some time ago to erect an Intercepting Hospital, I understand they have now abandoned the idea.

They should certainly be pressed to erect the hospital.

Leaflets descriptive of plague, and instructions as to obtaining specimens of serum, &c., and forwarding them for bacteriological examination were distributed to all the Port Medical Officers of Health at the various ports under my medical supervision. Their powers and duties under Article 8 of the Plague Regulations, were fully explained to them, and they were instructed to board all vessels coming from an infected area, whether they had reason to believe there was illness on board or not. They were also instructed to take the names of any person landing from a "suspected" ship and proceeding inland, to ascertain the address to which such person intended to proceed, and to communicate immediately with the Medical Officer of Health of that district, detailing the circumstances of the case, and asking him to keep the person under observation for at least ten days; also asking him to communicate in his turn, if the person left his district, with the Medical Officer of Health of the district to which he was about to proceed in the second instance. In this way it is hoped that persons landing from "suspected" ships will be kept under constant medical surveillance until the ordinary incubation period of plague shall have passed. Port Medical Officers were instructed to telegraph to the Local Government Board, and to the Medical Inspector, if any case of plague arose or was suspected. The coastguards and Customs' officers were asked at each port to facilitate the Port Medical Officer of Health by announcing to him the arrival of any vessel from the infected area, and by preventing any communication between the vessel and the shore until the Medical Officer shall have completed his inspection. In all cases his assistance was readily guaranteed.

J. COOPER STAWELL.

Medical Inspector.

November, 1900.

Names and addresses of Port Medical Officers of Health from Waterford to Tralee:—

Port	Name and Address.
Waterford, . . . . .	Dr. Stephenson, Dunmore East.
Dungarvan, . . . . .	Dr. Williams, Dungarvan.
Youghal, . . . . .	Dr. C. Ronayne, Youghal.
Cork, . . . . .	Dr. Hodges, Queenstown.
Kinsale, . . . . .	Dr. Vickery, Kinsale.
Clonakilty, . . . . .	Dr. Hadden, Clonakilty.
Rosscarhery, . . . . .	Dr. Daunt, Rosscarhery.
Courtmacsherry and Timoleague, . . . . .	Dr. Magner, Timoleague.
Skibbereen, Union Hall, . . . . .	Dr. Jennings, Skibbereen.
Castletownsend, Baltimore, . . . . .	
Crookhaven and Goleen, . . . . .	Dr. Twohig, Goleen.
Schull, . . . . .	Dr. Shipsey, Schull.
Bantry, . . . . .	Dr. Popham.
Castletownherhaven, . . . . .	Dr. Lyne, Castletownherhaven.
Kenmare, . . . . .	Dr. Mayberry, Kenmare.
Sneem, . . . . .	Dr. O'Donnell, Sneem.
Cahiriveen, . . . . .	Dr. Manua, Cahirciveen.
Waterville, . . . . .	Dr. Trant, Waterville.
Ballinskelligs, . . . . .	Dr. Behan, Ballinskelligs.
Dingle, . . . . .	Dr. Miles, Dingle.
Valencia Island, . . . . .	Dr. O'Driscoll, Valencia Island.
Ventry, . . . . .	Dr. Hudson, Dingle.
Tralee, . . . . .	Dr. Falvey, Tralee.



SCOTT & BOWNE

THE NINETEENTH AND TWENTIETH

THE 1884-1885 SEASON BOARD

1884-1885

1884

THE 1884-1885 SEASON BOARD  
THE 1884-1885 SEASON BOARD  
THE 1884-1885 SEASON BOARD  
THE 1884-1885 SEASON BOARD  
THE 1884-1885 SEASON BOARD  
THE 1884-1885 SEASON BOARD

THE 1884-1885 SEASON BOARD



UNITED KINGDOM

THE 1884-1885 SEASON BOARD

THE 1884-1885 SEASON BOARD

THE 1884-1885 SEASON BOARD  
THE 1884-1885 SEASON BOARD  
THE 1884-1885 SEASON BOARD  
THE 1884-1885 SEASON BOARD  
THE 1884-1885 SEASON BOARD  
THE 1884-1885 SEASON BOARD

THE 1884-1885 SEASON BOARD

1884